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HYPEROSTOSIS CRANII,

WITH THE REPORTS OF FOUR NEW CASES; A FIFTH CASE CONTRIBUTED BY DR. MORTON PRINCE; AND PHOTOGRAPHS OF A SPECIMEN IN THE ARMY MEDICAL MUSEUM.

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of Boston.

Nine years ago I had the opportunity of studying, at the Massachusetts General Hospital, a woman with an extraordinary enlargement of the head, associated with a partial obliteration of the cranial apertures, which had pushed out her eyes, paralyzed both facial nerves, and destroyed the hearing of both sides. The appearance that she presented was very unusual, and the photographs (Figs. 1, 2, and 3) give only an imperfect impression of the reality. The patient was at first in the wards of the hospital; later in the out-patient department. The diagnosis of hyperostosis cranii was made by Dr. R. H. Fitz.

I kept up my knowledge of this patient after she left the hospital, until, some years later, she drifted into Cambridge Almshouse, where she died. I then had the opportunity, through the kindness of Drs. Holt and Bryant, of being present at the post-mortem examination and of securing the specimen for the Warren Museum.

A brief outline of the case was given in the *Transactions of the American Neurological Association*, but the photographs which I obtained have never been published. Since then I have seen three other cases which seem to belong in the same category with hers, and Dr. M. A. Starr, of New York (December, 1894), has recently published in the American Journal of the Medical Sciences a case apparently of

the same disease, but presenting special features of interest. Dr. Starr suggests for the disease the name of megalo-cephalie, using this term to indicate a possible analogy between the case described by him and cases

FIG. 1.

Taken before illness began.

FIG. 2.

As when first seen at Massachusetts General Hospital.

of acromegaly. It is possible that Dr. Starr's case is of a different type from the others here referred to, but I shall provisionally assume that they all belong in the same category.

The literature of this subject has not yet become extensive, though sufficiently so to call attention to certain points of considerable interest.

FIG. 3.

Taken at Cambridge Almshouse about a year before death.

The best account that I have been able to find of the enlargements or thickenings of the cranium that are of interest in this connection, in publications prior to 1892, is that given by Virchow in his *Krankhafte Geschwülste*, to which all later writers refer with great respect. The term leontiasis ossea was suggested by him, to call attention to a possible analogy with elephantiasis of the dermal tissues, as well as on account of the appearance of the face with its bony prominences.

In 1892 Dr. F. Baumgarten published in Paris a monograph entitled "Leontiasis Ossea" (*Hyperostose des Os de la Tête*), in which he not only summarizes the earlier literature, but gives a description of thirteen famous skulls contained in one or another of the museums of Europe, and also analyzes the few clinical histories on record, with the result of bringing out a pathological theory of decided interest which is similar to that suggested by Dr. Starr in his excellent paper.

In the appendix a number of references are given which are taken from Baumgarten's monograph.

Le Dentu's paper is of especial interest, but deals rather with diseases of the jaws than of the skull.

Baumgarten also discusses the possible relation of the osteitis deformans, described by Sir James Paget, to the malady here in question. A distant relationship there may perhaps be, but Paget's disease affects the long bones more especially and is an affection of a later period of life.

In Virchow's opinion all the bony thickenings, whether localized in the form of osteophytes or generalized as in the specimens before us, are considered to be due to local processes of irritation or inflammation, and he points out how changes first localized and initiated by injury or

disease of adjacent parts may spread so as to involve a large part or the whole of the head. Thus in one of the most celebrated cases (Forcade) a suppuration of the tear-passage in a young boy seemed—although in Baumgarten's opinion the sequence was really the reverse of this—to give the impulse to an outgrowth of immense bony masses covering eventually the whole of the face and associated with thickening of the bones of the cranium. In Dr. Prince's case, also, a local injury seems to have been the immediate cause of the disease. In another case a diffuse enlargement of the head seemed to have had its origin in an erysipelas of the scalp, and this association was considered to be of special importance from the fact that elephantiasis, which Virchow considers to be pathologically somewhat allied to this form of hyperostosis, sometimes has its origin in the inflammation of the skin.

In spite of the fact that Virchow emphasizes the local irritations as being the probable origin of all these tendencies to bony outgrowths, yet he hints at there being some more subtle influence at work, in pointing out that the enlargement of the bones in one part of the body is sometimes followed by that of other parts of the osseous system, and in noting that some persons have a "predisposition" to this form of disease.

It is of interest to note that Virchow's conception of "predisposition" possibly stands in a closer relation to the trophic theory to which I shall presently refer to than might at first sight be supposed, inasmuch as he includes under this category such influences as heredity and the tendencies attaching to particular epochs of development. He thus, in a measure, anticipates Baumgarten's observations that the disease in its typical form begins in early youth. In the majority of the published cases the bony overgrowth seems to have begun when the patients were but twelve to sixteen years old, and in one of my cases, as in one of those collected by Baumgarten, it seems to have first shown itself in infancy. In many instances, however, this rule does not apply.

It may well be, as has already been suggested, that in the celebrated case of Forcade, alluded to above, in which the process seemed to originate in the suppuration of a tear-passage, the inflammation was in reality the result, not the cause, of the bony growth. In fact, similar inflammatory reactions have repeatedly been noted, and the history of one of my patients affords a striking example of this sequence (Case I.).

Baumgarten was the first, so far as I know, to suggest the theory to which Dr. Starr's case brings support, that the overgrowth of the cranium is perhaps a trophic change, analogous to acromegaly.

Dr. Starr advances, in support of this view, the fact that in his case the enlargement of the cranium formed only one part of the morbid change. The neck had grown thicker and shorter, the features coarser, and the skin had taken on an appearance slightly suggestive of some such trophic change as occurs in myxœdema.

In the present state of our knowledge it does not seem to me that we have sufficient evidence for deciding either in favor of or against this theory, nor are our pathological conceptions of what constitutes trophic change as contrasted with a local disease by any means satisfactorily clear. Baumgarten observed that in one or two instances the sella Turcica was unusually large, or otherwise changed in shape, as suggesting disease of the pituitary body, such as has been found in acromegaly. But these observations stand too isolated to count for much as yet, and as a matter of fact, in my specimen, the sella Turcica was narrowed like the other cavities of the skull. In another of my cases (Case II.), in which the disease began in youth, and apparently spontaneously, a somewhat bull-necked condition was present, which may perhaps have been analogous to that observed by Dr. Starr. Another explanation of this change suggests itself, however, which for Dr. Starr's patient at least may very likely be the true one; namely, that the tendency to bony overgrowth had involved the vertebræ of the neck, as in others of the reported cases.

As regards the changes in the skin and other soft tissues, none were present in my cases except in that the skin had taken on a yellowish color in Cases I. and IV., and that perhaps the hair in Case III. had grown unusually coarse. Virchow also refers to alterations in the skin and muscles of the face in the case of Forcade, but it is more than doubtful if these were of a kind to bear out the trophic theory. They seem rather to have been degenerative changes secondary to the disorders of nutrition incidental on the overgrowth of the bony parts beneath. And to the same cause falling of the teeth in my first case was probably due.

As against the trophic theory is the fact, which for the present must count for the essential one, that the pathological change hitherto observed seems to be an inflammatory one, involving the periosteum, the bone, the dura mater, in varying degrees, and usually leading to an obliteration of the diploë. Sometimes the diploë is rarefied, to be sure; but oftener it is changed to an ivory-like tissue, such as is occasionally seen in syphilitic skulls. In acromegaly, on the contrary, the changes are, on the whole, rather of the nature of hypertrophy, and signs of periostitis are, to say the least, not prominent.

In this connection the interesting point alluded to by Baumgarten should be noted, that the apertures for the nerves and vessels, instead of being narrowed, are occasionally found actually wider than normal, as this looks somewhat more like a development-change than an inflammation.

My specimen seems, at first inspection, to substantiate this observation; but, in fact, I think there is no doubt that the increased size of some of the apertures was due to secondary erosion or atrophy, and

possibly the same may have been true in the cases cited by Baumgarten.

The most important arguments in favor of the trophic or developmental theory are, perhaps, those drawn from the fact that the disease typically begins in youth, on which Baumgarten lays special stress, and that other bones of the skeleton, especially, perhaps, the vertebræ, sometimes take part in the tendency to overgrowth. In my second case, indeed, the disease had apparently begun by the time the patient was five years old. In Case I. the first signs were noted when the patient was nineteen, though the disease had doubtless begun before that. In the other cases the process apparently did not begin until adult life, though it is reasonable to feel a doubt as to the accuracy of the observations. Occasionally, such symptoms as epileptic attacks have been seen before the bones of the head had obviously enlarged (see Case II., and Baumgarten's photograph), and this fact should be remembered in making up statistics as to the age of the patient at the onset of the disease.

From the clinical side, this disease is of decided interest, and the number of clinical histories hitherto reported is so small (for many of the museum specimens were found accidentally post mortem), that new ones will, for a long while, be welcome.

The clinical picture of advanced cases is tolerably definite, though subject to considerable variation, depending on the rapidity of the growth of bone, its position with relation to the apertures and cavities of the skull, and whether or not it gives rise to exostoses projecting inward, and the position of these latter. There are, however, a few symptoms for which it is not easy to find an explanation. The reports of my cases will, perhaps, give a better idea of the symptomatology than a general description could do.

Case I. (Quoted in part from the records of the Massachusetts General Hospital, 1887.)—The patient was a Swedish woman, married, and twenty-eight years old when she presented herself at the hospital.

There was no sign or history of syphilis or other constitutional ailment, except that when she was three years old she had some disease of the ankle, followed by separation of several pieces of bone. The patient said that her mother and sister had both suffered greatly with their heads. It was not clear that they had actually had hyperostosis, though it was the patient's impression that their disease had been the same as hers. The patient thought that her own symptoms dated back to the time of her first confinement, nine years before. And her friends said that previous to that she was a good-looking, smart girl, *though inclined to excessive drowsiness.* One of the photographs (Fig. 1) was taken from an old ambrotype, and shows her condition at this period. She then began to suffer from headache and from pain in the ears and eyes, and this remained throughout a prominent symptom. Two years later she had a miscarriage, and a few years after that her teeth began to fall out, until, finally, they were all lost. A year or two after that she

began to become deaf, and her hearing finally disappeared entirely. The pains in the head increased intermittently, to great intensity. They were felt mainly at the vertex and through the temples. The broadening of the head and prominence of the eyes attracted attention a little later than the first symptoms. At the time this record (1887) was made her friends thought her intelligence had not suffered. For the past five years her skin, which had previously been white and fair, had been getting dark and discolored, at times very yellow. There had been a sero-purulent discharge from the ears since the early part of the illness, and the catamenia had been absent for three years. She felt dizzy when walking, and her husband said that when she tried to rise after having been asleep she often fell in a heap on the floor. The sight was said to be poor in one eye. The motions of the hands was unaffected. The temperature at her entrance into the hospital was 99° F. A.M. and 99.8° F. P.M.; the pulse 100 and 110. Respiration 16, 24. The quantity of urine passed on three successive days was forty, forty, forty-seven ounces.

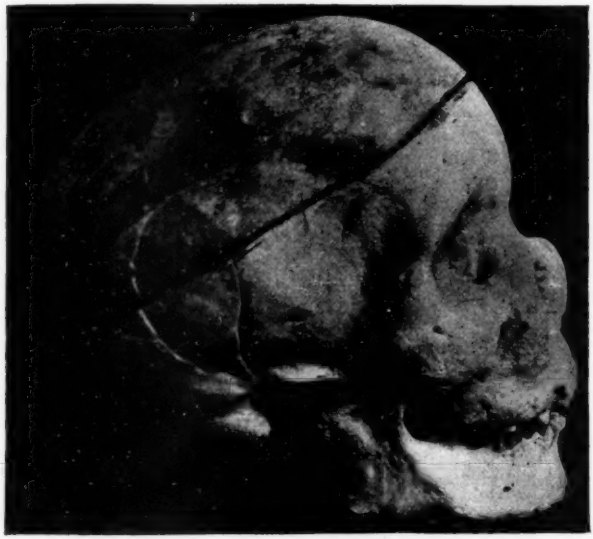
FIG. 4.

Her eyes, which were excessively prominent, were examined by Dr. O. F. Wadsworth, who made the following report: "R., media clear, fundus appears normal, though disk looks a little pale. L., a dense, sharply defined opacity occupies the anterior cortical portion of the lens, extending from the upper and inner border of the lens nearly to the centre. The patient is so uneasy and restless that no view of the fundus could be obtained. The iris reacts normally on both sides, and the movements of the globe are unaffected, except that there may be some diminution in the extent of the movement in all directions." In addition to these signs and symptoms, the patient had double complete facial paralysis, which contributed greatly to the drawn expression of

the face, illustrated by the later photographs. At what period this came on I do not know, but it persisted throughout her life, and the examination showed that it had its origin in obliteration of the Fallopian canals. Her death occurred at the Cambridge Almshouse some years later than this, from prostration due to purulent periostitis cranii, and (secondary ?) amyloid disease of the kidneys and liver.

The notable features of the post-mortem examination were a generalized purulent periostitis cranii, which has destroyed portions of the bony prominences; and an amyloid degeneration of some of the internal organs. The brain was to all appearances entirely healthy. I kept it for a long time, hoping to be able to study up the condition of the auditory and visual centres, but this has not been done.

FIG. 5.

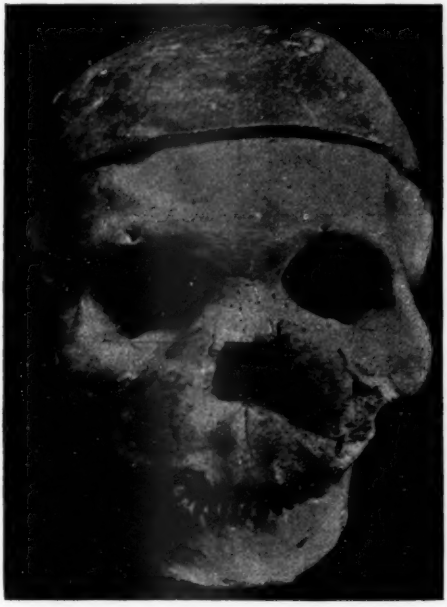


In external appearance the cranium (Figs. 4 and 5) is characterized (not to speak of the worm-eaten appearance due to caries, which will be described later) by a globular shape, a relative prominence of the forehead, broadening and flattening of the nasal processes, enlargement of the malar bones, and small size of the orbits, which are surrounded by relatively massive rims. The entire surface is uneven, but in general smooth and of a yellowish color. As a whole the specimen is relatively small, but broad, and when looked at in the front the leonine appearance given by the prominent forehead and cheek bones is well marked, though not so characteristic as in another remarkable specimen from the Army Medical Museum at Washington. (Figs. 6, 7, and 8.)

On closer inspection the surface of the frontal bones and the lower half of the temporals is seen to be worm-eaten from caries, due to the

suppurative process to which allusion has been made. Either in consequence of this cause, or else as a result of simple atrophy, both zygomas have been nearly destroyed. One is almost wholly wanting, and the reduction in size of the other is the more striking from the relative massiveness of the malar bone from which it springs. Its surface, however, is for the most part smooth. The weight of the skull is nearly twice that of a normal specimen of the same size. On section the hyperostosis is seen to be universal, but the greatest thickening is anteriorly, where it reaches nine-sixteenths of an inch, or one and five-tenths of a centimetre. At certain points on the temporal bones the caries has given rise to perforations, and signs of the erosion are seen at various points within the skull.

FIG. 6.



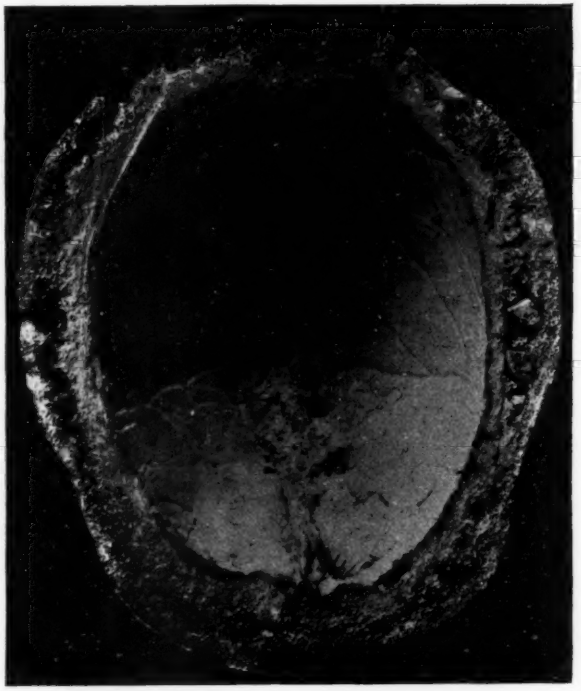
The capacity of the interior is, on the whole, not greatly diminished, but all the sharp lines and processes are thickened and rounded, and here and there, as on the floor of the anterior fossa and over the left petrous bone, distinct prominences are to be seen. The sella Turcica is also narrowed by a growth of bone, an important point in connection with the observations of Baumgarten.

The inner surface is somewhat rough and uneven, and scarcely a trace of sutures is to be seen. Indeed, the sutures are not visible, even upon the outside, except for short distances here and there, as irregular lines. The edges of the cranial apertures are thickened and rounded,

except where the bone has suffered from caries or atrophy. The Fallopian canals are entirely obliterated; likewise the passages through the cribriform plate of the ethmoid.

It is noteworthy that the vascular grooves are practically absent, and in that respect the specimen contrasts greatly with the one next to be described, and with several of those noted in Baumgarten's collection. The diploë is converted into a dense, homogeneous, ivory-like growth of bone.

FIG. 7.



CASE II.—A young man, aged eighteen years, was referred to me in January, 1889, from the Massachusetts Eye and Ear Infirmary, where he had gone for advice on account of deafness. His ears had been examined by Dr. C. J. Blake, who reported that both middle ears were fairly normal, and the Eustachian tubes free. He had found, however, that the hearing was entirely absent on both sides for both aërial and bone conduction. In speaking, the patient showed a tendency to an imperfect production of the soft consonants.

I followed this case also from the time of his first coming to the hospital until his death, which occurred some three years later. His history, as given by himself and his friends, was the following: When he was five years old he fell from a stone wall and was unconscious for

half an hour. Except for this he was perfectly well until seven years old. Then he began to have convulsions, but had only three in the first year and two in the next, and then none until he was thirteen years old, when he had a slight one in the night. After that none occurred until within about a year before his death. The later epileptic attacks were not localized. They were ushered in by a cry. For several years before coming to the hospital he had had dull headache, and his mental operations had become slow, so that when he sat down

FIG. 8.

to write a letter he would have to pause and think for a long time before being able to proceed. At times he would get irritable and excited without apparent cause, a tendency which increased markedly toward the end of his life. His brother, who had not seen him for some time, said that his mental faculties were not so alert as formerly, and that he seemed to be changed in an indefinable way. On physical examination the head was found to be large and the forehead rounded and prominent. The marked broadening over the ears described in the

account of the other cases was not noted, but, instead of that, several broad, rounded prominences of which my notes contain the following description: "On the top of the head there are two broad exostoses, about two and a half inches across at the base and a quarter of an inch in height. One of them is situated to the left of the median line, with its posterior edge reaching to the line of the bregma; the other is on the right of the median line and its anterior edge is about an inch and a half behind the posterior edge of the other growth. Besides this the occipital protuberance is very prominent and the temporal ridge unusually full. The forehead is rounded with a large curve, and along the frontal bone there is a narrow groove which begins almost at the root of the nose, runs upward, curving slightly to the left, and ends at the edge of the hair. A similar groove, but less marked, exists on the right side, and the two enclose an ellipse, through the middle of which runs the frontal suture. Similar grooves are found in other parts of the head, following the course of the sutures, though not exactly in the line of them. The eyes have a prominent and staring look, and his friends think they have gradually become worse in these respects. The pupils respond to strong light, the right better than the left." A slight but well-marked optic neuritis was noted at this time, that of the right eye being somewhat greater than that of the left. The neck looked very full, but the patient said his collar felt no tighter than formerly. The pulse at the end of a long examination was 130, but when taken by his physician at home it was found to be 62 in the morning and 75 at night. With regard to the possibility that the exostoses originated in the fall from the wall above alluded to, it is noteworthy that his brother says that the head was shaved within three hours after the fall occurred, and the lumps were found to be already present, though no larger than a bean.

The subsequent history of this case was in brief one of very slow, progressive mental deterioration, varied by intervals of excitability and occasional epileptic seizures. The exostoses and the head in general became steadily larger and larger. He continued to work as a roofer for some years after his deafness had become complete and after the neuritis had begun. But finally the eyesight failed more and more, and the gait became so feeble and uncertain that he remained practically confined to his room. I did not know of his death until some time after it occurred. His friends then told me they would have been glad to have had an examination, but that the physician in the town where he lived unintelligently discouraged the idea.

Case III. is that of a man referred to me by Dr. H. O. Marcy in December, 1892. He was then fifty years old, married, and engaged in the provision business. His health previous to the present illness had always been satisfactory. He gave the history that his head had been growing larger for ten or twelve years. Neuralgic pain recurring at short intervals in various parts of the head had bothered him for some years, and for the past year had been especially troublesome. At times this pain had been attended with nausea and vomiting. At first it used to be felt mainly in the temples; later, in other regions as well. His eyesight was good, but the hearing had been poor for a number of years. He found it especially hard to catch what was said when a number of persons were talking, and this difficulty was increased by a

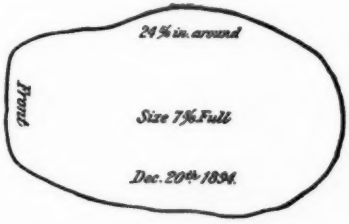
throbbing sensation in the right ear, which could be temporarily relieved by pressing on the bloodvessels of the neck.

He felt well in most respects, but was troubled by bad dreams, and when the headache annoyed him he felt drowsy, unless the pain was very severe, when he could not sleep. His feet felt cold and his head hot. At times he had a sense of light-headedness, and his legs would seem to give out. He could assign no cause for his disease, with the exception that fifteen years before he had abscesses in both ears; whether

FIG. 9.

FIG. 10.

FIG. 11.



in the middle ear or the meatus he could not say. This history, of course, throws doubt on the supposition that the deafness was due to pressure, although, as in the Forcade case, and in my case No. 1, the suppuration may have been a sign of disordered nutrition. As regards the evidence as to the size of the head, the patient reported that whereas he used to wear a $6\frac{7}{8}$ hat he now wears a $7\frac{3}{4}$, and that his measurements were constantly increasing. (Figs. 9, 10, and 11.)

Neither in this case nor in either of the others, unless possibly the first,

had any other member of the family suffered in a similar manner as the patient. The following letter gives an idea of his present condition:

FEBRUARY 9, 1895.

DEAR SIR: Yours of January 12th received in California. In reply to your kind inquiry will say that my head is still growing slowly about one-quarter of an inch a year. I do not have any more trouble with it than usual, but think that throbbing, every time my heart beats, up through my ears, mostly my right ear, is increasing, which is quite disagreeable. It makes me hard of hearing, and sometimes it keeps me awake nights. I have to place my finger on the side of my neck over a vein when I want to hear anyone speaking. I have been troubled with it for twelve or fourteen years, ever since my head commenced to grow larger.

On physical examination the patient is seen to be a man of middle height, and rather slender in general build, which makes the great size of the cranium the more striking.

The enlargement affects especially the frontal and lateral portions, but is diffuse, though accentuated here and there in such a way as to cover the surface with irregularities and prominences of varying size.

The bones of the face are not enlarged, but the edges of the orbits are thickened and the upper lids somewhat prominent, as seen in cases of Graves's disease.

Every exertion and every posture that interferes with the return of venous blood from the head brings on at once a strongly marked congestion of the face, with sweating, and causes the veins of the forehead to stand out very prominently. He has found the throbbing relieved by wearing round the neck a light steel spring with a pad to compress the carotid. The propriety of a permanent closure of the vessel by ligature is being considered by his physician, Dr. H. O. Marcy.

CASE IV.—Female patient, a dressmaker, aged thirty-five years. The enlargement of the head was first noticed twelve years ago or more in the neighborhood of the left parietal eminence, but the exostoses, which will be described, were not observed until later. The only symptom of note has been a tendency to attacks of a quite severe burning sensation referred to the right side of the head and face, and associated with a sense of numbness in the face. These attacks last five minutes or less. Sometimes, in connection with them, the jaw gets stiff, apparently by contraction of the muscles of mastication on the right side. If, while lying in bed, she stretches herself with the hands over the head, an intense and painful feeling of fulness comes on, evidently an exaggeration of a sensation that we have all experienced, but so severe as to oblige her to compress the head with both hands for relief. Sometimes she seems to have a sort of double vision, which is perhaps due to an irregular action of the ocular muscles. On physical examination the head is found to be greatly enlarged in all directions, though not uniformly. The greatest width is above the ears, where the cranium broadens rapidly. The longest circumference is sixty-five and a half centimetres. The surface is very irregular, and covered with bony prominences of different shapes. The bone in the neighborhood of the temporal ridge is enormously thickened, while above that on either side there is a shallow depression stretching along parallel with the median line. The veins on the temples are distended. The eyes do

FIG. 12.

FIG. 13.

not protrude, but the upper edge of the orbit is thickened and rounded so as to form a prominence below the eyebrows. The nutrition of the teeth has not been interfered with, but they were extracted on the right side in the hope that this might relieve the pain. The eyes were examined by an oculist in Manchester, and found normal, with the exception of astigmatism and presbyopia. There are no trophic changes in the skin, face, neck, or limbs, but the patient has a heavy crop of rather coarse hair.

The photographs give no adequate notion of the enormous dome which her head presents, but the massive forehead and the great length of the measurement from the ears to the vertex are quite evident. (Figs. 12 and 13.) The thickening of the orbital plates is sufficiently clear.

For the sake of convenience of reference, and in order to show the variability of the symptoms in the different cases, I have arranged in the order of their frequency the symptoms presented by the seven more typical cases collected by Baumgarten, together with those which occurred in Dr. Starr's and Dr. Prince's cases and in the five others here recorded.

Baumgarten divides the deformities of the skull into three types, according to whether the vault of the cranium, the upper face, or the lower jaw is the part primarily and mainly affected. The greater number of cases fall within the second of these groups, and even where there is no marked deformity of the face still the changes found post mortem may predominate in the anterior portion of the cranium, as in my first case, and in that of a patient whose history has been given me by Dr. Morton Prince.

The ages of the patients at the assumed onset of the disease were as follows:

Under 5 years	2 cases.
5 to 10 "	1 case.
10 to 20 "	4 cases.
20 to 30 "	1 case.
30 to 40 "	3 cases.
Over 40 "	3 cases.

In other words, seven patients were under twenty years of age at the onset of the disease, and seven were apparently over twenty years of age. The patient whose skull is preserved in the Warren Museum is said to have been well up to the age of fifty.

Certain symptoms or signs are worthy of note as having occurred before the bony change was noted:

Epileptic attacks occurred very early in two cases; suppuration of the ears in two cases; of the tear-duct in one case; erysipelas of the head in one case.[1] An injury of the head seems to have been the cause of the disease in Dr. Prince's case

[1] See also the report of a case by Edes, in this number of the JOURNAL.

As a matter of fact, it is not improbable that some of these events were due, directly or indirectly, to the disease in the bone. In one case (Observation 3, Baumgarten's collection) deafness and blindness occurred quite early, and were apparently related to a family tendency.

Of the symptoms due to the bony changes the most common is headache, which was present in about half the cases. This may be diffused or localized, but is probably due, as a rule, rather to a disease of the bone itself (osteocopic pain), than to intracranial pressure. This is also Baumgarten's view, and it is borne out by the fact that the pain may be present without other symptoms of pressure. Sometimes such symptoms do exist, however, as double optic neuritis in my second case and optic atrophy in Dr. Prince's case. Another cause for the headache is then present, and the whole symptom-complex might easily suggest tumor or some other sort, especially if, as happened in one case, the bony changes were not marked externally.

Pain is sometimes also felt in the face and in the limbs.

The next most common symptom is mental irritability or enfeeblement, which was noted in seven of the cases. Exophthalmos was present in four or five of the cases, but sometimes where this cannot be distinctly made out the edges of the orbits may be felt to be thickened or the upper eyelids to be unnaturally prominent, as in some cases of Graves's disease. Loss of hearing was noted in four of the cases, and loss of smell and taste in three; but it is highly probable that careful examination would have found this sign oftener. Insecurity in walking was very marked in three cases, and in my second case it led eventually to a high degree of helplessness. Awkardness in the use of the hands was noted in two of the cases. Occasionally epileptic attacks come on as a late symptom.

In my first case the teeth were all lost quite early, and this is of special interest because Baumgarten declares, in discussing the differential diagnosis between hyperostosis and sarcoma, that the teeth have no tendency to fall out in hyperostosis, but are often lost in sarcomatous disease of the jaw.

Double optic neuritis is not noted in any case, except No. 2 of my collection,[1] but it had probably been present in Dr. Prince's case, as atrophy was found at the time of his examination. Drowsiness was quite prominent in two of my cases, also in that reported by Dr. Prince.

The course of the disease is always a very long one, and the prognosis is unfavorable. The clinical history of my first two cases shows some of the modes in which the fatal result may be brought about.

Besides the cases to which I have hitherto referred, the Warren Museum of the Harvard Medical School contains a very interesting

[1] It was present in Edes's case.

specimen originally belonging to the Spurzheim collection. It is described in the catalogue as follows:

"No. 1209. Top and base of a remarkably thick skull of a woman, who, at the age of fifty years, enjoyed the use of all her faculties. From this period her skull thickened gradually by disease, and her faculties became impaired in the same ratio, until she died at the age of sixty years. The average thickness of her skull is about one inch, and the extremes three-eighths to one and one-half inches."

In spite of the excessive thickness of this skull, it is remarkable that the bones of the face are relatively little affected. Taken as a whole, the great width of the ears, amounting to eight and three-eighths inches, is one of the most striking features.

The average thickness is about one inch, the extremes being three-eighths and one and one-half inches. The outer surface is generally smooth and polished, and there is hardly a trace of sutures to be seen.

On the inside the bone is excessively irregular and the cavity evidently encroached upon, in spite of which the edges of the sphenoid and petrous bones have preserved their delicacy, and the canals and apertures have not been much narrowed. The grooves for the vascular canals are deep and numerous. The diploë is, for the most part, destroyed, though sometimes present.

In addition to the plates of this specimen, I am permitted, through the kindness of the Curator of the Army Medical Museum of Washington, Dr. Walter Reed, U. S. A., to reproduce some very beautiful photographs which finely illustrate the leonine type of this disease. Dr. Reed writes that no history of this case is preserved, except that the specimen came from a mulatto woman, and was found in a dissecting-room in Baltimore.

Finally, I have the opportunity, through the kindness of Dr. Morton Prince, of reporting a case which he had personally observed, together with the report of the post-mortem findings:

The patient was first seen in consultation by Dr. Prince, two years before his death, in the wards of the Boston City Hospital. It was then stated that four years previously he had been struck on the forehead by a pulley, which made a wound three inches long. It was uncertain whether or not the bone had been broken.

Two years after this he first noticed swelling of the frontal bone. He thought his eyesight began gradually to fail about this time; but said that his eyes had always been prominent(?). He had suffered throughout his illness with constant dull pain in the forehead, and nausea and vomiting had been of frequent occurrence. While in the hospital his chief symptoms were frontal headache, great drowsiness, and mental dulness. His memory had evidently become impaired.

Both eyes were very prominent, and an ophthalmoscopic examination by Dr. H. W. Williams showed partial atrophy of the right optic nerve and a number of small retinal hemorrhages. There were no

marked paralytic symptoms, and no other cause for the disease could be assigned than that given above. Syphilis was denied. At an interview subsequently to this the patient's wife stated that the mental condition had been dull and peculiar for a long period. His memory for recent events had become very poor. It was also difficult to make him understand new ideas, though he could converse on various topics, especially on those related to his army life. He was emotional and at times sub-delirious. Although his eyesight had become much impaired, he could see enough to read till shortly before his death. His wife further stated that for several months previous to his entrance into the hospital he had a hemiparesis of the left side without aphasia.

At the post-mortem examination the frontal bone was found thickened in the mid-frontal region so as to form a prominence an inch thick, over an area three and a half inches wide by two inches high. The temporal ridge, at its frontal end, was also thickened and prominent, so as to form a sort of exostosis.

On removing the calvarium it was found that the under surface of the bone in the frontal region was quite firmly adherent to the dura. The bony prominence of the forehead did not project much on the inner surface of the skull, but this surface of the frontal bone was thickened evenly and had a smooth, shiny appearance. It looked as if the bone had become thickened by even deposits of extra layers of bone.

The orbital plates within the cranium were enormously thickened and enlarged, so that they compressed the brain upward. The under surface of the superior orbital plates could be plainly felt in the orbit with the finger. Owing to the thickening of the bone this surface formed a plane nearly on a level with the superior margin of the orbit, so that the natural convexity seemed to be almost lost, and the orbital cavity diminished in size. This diminution of the cavity had pressed the eyes outward during life.

Within the cranium the orbital plates measured one and one-half inches antero-posteriorly. The space between the orbital plates measured on an average three-quarters of an inch in width. Into this space the corresponding convolutions of both hemispheres had been squeezed. The frontal bone beyond the limits of the exostosis was one-half of an inch thick. (This last measurement was apparently at level of the section, but the height at which the section was made is not given in the notes. It could not have been through the exostosis.) The convolutions of the frontal lobes were plainly compressed between the orbital plates below and the frontal bone above. The convolutions measured on an average one-quarter of an inch in diameter in the frontal lobes, and from three-eighths to one-half of an inch in the middle lobes. Further examination (macroscopical) of the brain revealed nothing remarkable excepting a large quantity of fluid in the ventricles.

Dr. Prince adds in conclusion: "I would say that the condition of the skull and brain at the autopsy gave the impression that if a considerable portion of the frontal bone had been removed by an operation during life his condition might have been relieved. This operation had been considered, but was given up."

The likeness of some of the symptoms to those of brain-tumor in many of these cases is indeed obvious, and the question naturally presents whether operative interference could be of benefit. One of my

patients entered the Massachusetts General Hospital to have this question considered in his case, but it was decided, perhaps without sufficient reason, that the operation should not be done, in view of the fact that the change was of so diffuse a character that hearing was already lost and eyesight impaired, and that it would be impossible to form much idea as to the exact position of the intracranial exostoses, the presence of which was assumed. Virchow says that these are apt to coincide more or less with external prominences, where such exist, but this is by no means always the case. The great thickness of the bone would render operation difficult and long, but I think it should be tried when the growths are moderately circumscribed. It is worth considering whether it might not be possible in some way to arrest or retard the progress of the disease, and it has occurred to me as conceivable that the bone might be starved out by cutting off its supply of blood. No other treatment hitherto suggested has been of service, although in one of my cases I tried the effect of giving thyroid preparations, as did also Starr in his.

[Since this paper was written I have had an opportunity, through the courtesy of Dr. R. T. Edes, of seeing a typical case that was under his care, a description of which appears in this issue of the JOURNAL.

I would call attention to the fact that this makes the second case in which chronic optic neuritis has been found, and also confirms my impression that the anterior portion of the skull seems the part most likely to be affected. The case is also important in other respects. The patient had an attack of erysipelas of the head or face in early youth, as noted by Virchow in one or more of the earlier cases. It was noteworthy, furthermore, that the thickening did not involve the bones of the orbit, to any extent, if at all. The upper border, instead of being heavy and rounded, was as sharp as in health. Above this the frontal bone was at its proper level, and apparently unchanged for a few lines, but immediately beyond this the shelving forward began.

I have not attempted in the preceding paper to give any account of so-called osteitis deformans of Paget, because, although the bones of the head are sometimes involved in that affection, its characteristic feature is the change in the long bones; while, on the other hand, this does not form a characteristic element in the cases such as I have described.

I will, however, refer to the fact that very recently the account of an autopsy in Paget's disease has been published by Gilles de la Tourette and Marinesco (*Nouvelle Iconographie de la Salpêtrière*, July and August, 1895), according to which the posterior columns of the spinal cord were found degenerated. It seems to me probable that this change was not the cause of the nutritive disorders of the bones, but an associated condition, since, as everyone who has followed the literature of the spinal-cord diseases is aware, nutritional and debilitating affections of various sorts

leave their stamp on the nervous system in that form. The authors cited, however, do not wholly share this view, and their reputation entitles their opinion to much weight. Although they do not speak positively, they are inclined to consider that these changes point to a spinal cause of the bony changes, which makes them analogous to those met with in tabes. They refer also to an earlier post-mortem made by Tourette and Magdelaine, where a similar lesion was found in the cervical region of the cord, the rest not having been examined. It is noteworthy that the columns of Clarke appeared not to have been involved. The nerve-trunks of the lower extremities were enlarged and œdematous, and were the seat of an interstitial neuritis which they consider to have been of vascular origin.]

Appendix.

1. *Baumgarten:* Léontiasis Ossea.
2. *Huschke:* [Ueber Cranioscleroſis Totalis Rachitica. Jena, 1858].
3. *Jadelot:* 1799.
4. *Gaddi:* [Iperostosi Scroful. Cerebr-vertebral. Modéne, 1864].
5. *Le Dentu:* Rev. mens. de méd. et de chirurgie, 1879.
6. *Guyon and Monod:* [Hypertrophie diffuse. Dictionnaire Encyclopédique].
7. *Poisson [de Nantes]:* Semaine méd., 1890.

Poisson suggests the hypothesis of a trophic neurosis. Nine specimens without clinical history are described in connection with the specimen of Jadelot. It is said that the auditory canal is only slightly narrowed, and this is thought to be because the bone is simply an ossified membrane. Thirteen clinical observations are described, of which one (Saucerotte) is supposed to be a case of acromegaly, and four are cases of sarcoma or bony growths of the maxillary bones alone. Heath (on Diseases of the Jaw, p. 134) (Obs. 8) describes a case of unilateral hyperostosis of the face with hypertrophy of the soft parts and curious anomalies of dentition, the whole being practically congenital in origin. In one or two other cases the clinical history suggests that the disease may not have been typical of the affection here at stake.

The seven observations utilized in this paper are as follows:

Observation 1. *Ribel fils:* Thèse, Paris, 1823. Dissertation sur les exostoses.

Observation 2. *Saucerotte:* Mélange de Chirurgie, p. 407.

Observation 3. *Von der Sneck:* Ilg. Einige Anatom. Beob. Prague, 1822. *Gruber Wenzel:* Beitrag zur Anat. Phys., etc. Prague, 1847.

Observation 4. *Wrany:* Jahresbericht über die Leistungen, etc., 1867.

Observation 5. *Schützemberger:* Gaz. Méd. Strasbourg, 1856, No. 4.

Observation 6. *Biekersteth de Liverpool:* Trans. of Pathological Society of London, 1866.

Observation 7. *Poisson de Nantes:* Semaine Méd., 1890.

A CASE OF HYPEROSTOSIS OF THE CRANIUM.

By Robert T. Edes, M.D.,
of Jamaica Plain, Mass.

Mrs. — has had eight children and two miscarriages. She ceased to menstruate at the age of forty-five, being now fifty-two. Her family history is not significant. Five (or six) years ago she had la grippe, which was succeeded by a light attack of facial erysipelas upon the left side. It is impossible to obtain from the patient or her relatives any very definite account of the time when the present condition of things was first noticed. She says that her head was always large, and she

thinks it was always one-sided, but it is evident from photographs that it was not of its present shape. Within the last two years, however, it seems to have attracted the attention of some relatives who were not in the habit of seeing her frequently. Her daughter thinks there was some change as much as five years ago. A sister was very sure there had been no change in the shape of her head, and was convinced to the contrary only by seeing the contrasted photographs. At about the menopause she thinks she began to feel badly.

A weakness of gait has been noticed about four years. Recently she has been growing weaker, and complained of dull pains about the neck and shoulders and uncomfortable sensations about the head, but she is not subject to well-marked severe headaches. She now walks with much assistance, bent over and supporting a large part of her weight upon the nurse. The motion of the feet, however, appears unimpaired, as well as that of the hands, and there is no paralysis of any cranial motor nerve, unless possibly such is indicated by a barely perceptible droop of the left upper eyelid.

The knee-jerk is unusually strong upon both sides, but there is no ankle-clonus. The arm-jerks are also much beyond the average.

There is no enlargement of the bones of the extremities, the most characteristic feature in her general appearance, except the head, being the limp way in which she drops together, as if from relaxation of the osteo-ligamentous structure of the spine or weakness of the erector spinæ muscles.

Vision seemed all right until about six months ago. She passes much of her time in reading, holding her book about a foot away, and she has not been aware of any difference in the two eyes, although with the right she can barely count fingers three feet off. In the right eye the choroidal vessels are very prominent. The disk has a dark ring of pigment about it, but the edges otherwise somewhat indistinct, the vessels, however, being normal, and the color nearly or quite so. There is no protrusion. In the left eye the choroidal changes are perhaps more marked, and the outlines of the disk less distinguishable. Possibly slight optic neuritis or its remains.

The hearing is good.

The impulse of the heart is felt well out on the left in the fourth intercostal space, quite distinct, but not strong and heaving, giving the impression of an active but not powerful beat, corresponding to the ample but rapidly falling sphygmogram.

The general nutrition is in fair condition.

The urine is nearly normal, containing no casts and only a faint trace of albumin on one occasion, with a due proportion of urea and of indican.

Her mental attitude is not altogether unlike the bodily, and is in striking contrast to that of the ordinary neurasthenic. Her memory has been somewhat poor for a year. The mind is apparently perfectly clear, but its action is slow, vague and unexcitable. So far as one can judge from her manner, she takes only a slow and distant interest in her own case. Her reaction-times, between the movement of a shutter and striking a telegraph-key, averaged forty-one one-hundredths of a second, more than double the normal, and with a wide range of variation between the individual trials. Her speech, however, is not especially slow, indistinct, or slurred.

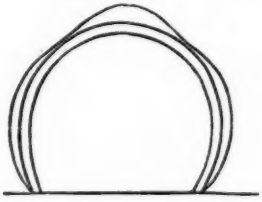
The form of the cranium is, of course, the most interesting feature of the case, and is highly characteristic. Figs. 1 and 2 show the change which has taken place at some time between early life and the present,

FIG. 1.

FIG. 2.

and presumably within a few years. The enlargement is especially noticeable in the anterior portion, the forehead being rounded, the temporal fossæ greatly filled out and rounded, giving the whole front view a bulbous overhanging look like that of hydrocephalus. The eyes are somewhat prominent. An outline from one meatus auditorius to the other in the neighborhood of the coronal suture shows three quite distinct enlargements, viz., in each temple and on the vertex, the next inner line giving the outline of a more average head. The third and inmost outline was taken from her daughter's head. (Fig. 3.) There is no tenderness anywhere over the head. The changes in the occipital region or cervical spine, if any, are not obvious to palpation. The hair is moderately thick and but very slightly gray.

FIG. 3.



Further comments are unnecessary in the presence of the very complete paper in this number of the JOURNAL by Dr. J. J. Putnam, who kindly saw this case with me after his article was already in the hands of the printer.

In the absence of any more definite indications for treatment other than general hygiene, I have felt justified in acting upon the hint given by certain remote resemblances of this rare and mysterious affection to myxœdema, and have begun the administration of dried thyroid in capsules. I have been informed, however, by Dr. Putnam, that this has been tried both by himself and Dr. Starr without favorable results, and further experience gives no reason to suppose that this case differs from theirs in that respect.

THE ARGYLL-ROBERTSON PUPIL, ITS NATURE AND SIGNIFICANCE; A CLINICAL STUDY.

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CONSTRICTOR impulses for the pupil reach it by way of the third nerve, coming from its nucleus in the gray matter of the floor of the Sylvian aqueduct under the anterior corpora quadrigemina. From the

third nerve they pass to the lenticular ganglion by its short or motor root; then from the ganglion by the myotic or short ciliary nerves to the iris (sphincter pupillæ). The afferent portion of the reflex mechanism concerned in the contraction of the pupil will be considered presently.

The centre for dilatation of the pupil is in the floor of the aqueduct of Sylvius, externally to the constrictor centre. Dilator impulses pass down through the crus cerebri, medulla oblongata, and spinal cord to the upper dorsal region; thence out by the upper dorsal anterior roots (particularly the second, third, and fourth, according to Budge) and rami communicantes to reach the ganglion stellatum (first thoracic sympathetic ganglion); then by the ansa Vieussens (which encircles the subclavian artery) and the cervical sympathetic to the superior cervical ganglion, where the fibres become non-medullated. They next pass, by the ascending (carotid) branch of the ganglion, to the Gasserian ganglion on the fifth nerve; then by the ophthalmic division of this nerve, and the nasal branch of this division, directly to the eyeball (mydriatic or long ciliary nerves to the dilator pupillæ).

A supposed "inferior cilio-spinal centre" was located by Budge in the lower cervical and upper dorsal region of the cord.

The probability that the dilator fibres for the pupil lose their medullary sheaths in the upper cervical sympathetic ganglion is in accordance with a general law expounded by Gaskell,[1] who has shown, with regard to vascular and visceral nerves, that while nerves whose function is of a katabolic order, including motor, constrictor, or augmentor nerves, nerves to circular muscles, and, in general, nerves conveying impulses which lead to a discharge of energy, lose their medullary sheaths in proximal (lateral or vertebral) ganglia of the sympathetic or visceral system; those, on the other hand, whose function is of an anabolic order, including inhibitory, retarding, or dilator nerves, nerves to longitudinal muscles, and, in general, nerves conveying impulses which lead to a storage of energy, become non-medullated in distal (collateral or prevertebral) ganglia.

In opposition to the view long generally held, a considerable body of evidence has lately been brought forward to show that there is no true dilator muscle in the iris, and that dilatation is, to a certain extent at least, produced by inhibition of constrictor impulses.

Gaskell has shown that the superior cervical ganglion of the sympathetic, which is connected with the central nervous system by the cervical sympathetic cord (cervical splanchnic) only, belongs to the group of collateral or distal ganglia of the visceral nerves. There is a striking analogy between the dilator nerves of the pupil and the inhibitory nerves of the circular muscle of the intestine. They both leave the cord in the thoracic outflow (upper and lower dorsal regions, respectively) as fine medullated fibres of the anterior roots; pass over the lateral ganglia (great

sympathetic chain) and along the splanchnics (cervical and abdominal splanchnics, respectively) to reach the distal ganglia (superior cervical ganglion and semilunar ganglion, respectively) before losing their medullary sheaths. The distribution and course, therefore, of its controlling nerves suggest strongly that dilatation of the pupil is an inhibitory process.

Moreover, according to Fuchs, the posterior limiting membrane of the iris is its only structure that is not thrown into folds when the pupil dilates, so that probably the elasticity of this membrane has a good deal to do with dilatation. At the same time, it must be admitted that there is still some obscurity on this point, because a pupil which is dilated from paralysis of the third nerve can be still further dilated by the agency of atropine. It will be wise, therefore, not to lose sight of the older theory that a dilator pupillæ exists until we get a more satisfactory substitute.

The mode of production of the Argyll-Robertson symptom (reflex iridoplegia) introduces us to one of the most perplexing questions in the anatomy of the central nervous system. Not many years ago the question was answered very simply thus: The patient's vision is normal; therefore the lesion is not in the optic nerve or afferent part of the reflex arc. The contraction of the pupil during accommodation or convergence shows that the third nerve or afferent part of the arc is normal. And, therefore, it was inferred, the lesion must be in some fibres connecting the optic tract, or its termination in the primary optic centre, with the nucleus of the third nerve. As a matter of fact, Meynert has shown that fibres do run between the corpora quadrigemina and the third nucleus, so that these may be the seat of lesion.

But Gudden has demonstrated that the optic nerve contains special fibres for the pupillary light-reflex, distinct from those for vision, and accordingly the fact that vision is intact can no longer be accepted as proof that the optic tract and nerve are healthy. Moreover, Bechterew believes that the afferent fibres for the light-reflex pass the chiasma, without decussating, to the gray matter of the third ventricle, and thence to the nucleus of the third nerve on the same side. Mendel, and to a certain extent Darkschewitsch, believe that the centripetal route is by the optic nerve and tract of the same side to the ganglion habenulæ, then across by the posterior commissure to the opposite third nucleus.[2]

Darkschewitsch again describes a bundle which atrophies after extirpation of one eyeball. It leaves the optic tract on the side opposite to that on which the operation was performed, near the lateral geniculate body, passes through the thalamus to the pedunculus conarii and pineal body, and thence, passing by the ventral portion of the posterior commissure, reaches the oculomotor nucleus on the side of operation. This

is another route which has been supposed to be concerned in the pupillary reflex.[3]

Morbid anatomy has not yet demonstrated the anatomical basis of the Argyll-Robertson pupil. We must, therefore, be content in the meantime with speculation.

It seems to me that additional light may be thrown on this symptom by a consideration of its associations. It is generally seen in cases of locomotor ataxy, being probably present in at least four out of every five cases of that disease. Buzzard in the first place (1880), and shortly afterward Erb (1880), called attention to the striking analogy between this symptom and the abolition of the knee-jerk, which is one of the most important because it is one of the earliest and most constant symptoms of tabes dorsalis. The iris contracts during the voluntary effort of looking at a near object, but not reflexly to light; the quadriceps crucis is perfectly capable of voluntary contraction, but fails to contract reflexly when the patellar tendon is struck.[4]

Various explanations of the Argyll-Robertson pupil have been proposed. Its discoverer thought it was due to disease of the cilio-spinal region of the cord, causing paralysis of the dilator pupillæ.

Hempel thought the spinal myosis of early tabes was due to paralysis of a pupil-dilating centre in the medulla oblongata; while the reflex iridoplegia was owing to an interruption in the path from optic to the oculomotor nerve, the centre of the latter being normal.[5]

Another theory is that the afferent portion of the light-reflex arc passes from the optic nerve into the cervical cord to influence motor centres there; so that the loss of the reflex would be due to damage to centres or fibre-tracts in the cervical region of the cord.

One of the most commonly accepted theories is that the disease is seated in Meynert's fibres which pass from the corpora quadrigemina down to the oculomotor nucleus; while another is that the lesion is in the fibres passing from the back of the optic chiasm directly through the gray matter of the third ventricle to the third nucleus (Bechterew's tract), or from the optic tract to the same nucleus by the more complicated path described by Darkschewitsch and Mendel, and already alluded to.[6]

Now if, in the meantime, we exclude those theories which localize the lesion underlying reflex iridoplegia outside the cranium, it is plain that writers have almost all been endeavoring to fix on some point in the afferent portion of the reflex arc. There are probably three good reasons for this:

1. The afferent tract is so simple, and, relatively speaking, so easily investigated, that, as disease has never been found in it to account for the symptom, it is the most natural thing possible to look upon the afferent tract as at fault.

To this it may be replied that disease has never been found in the afferent path.

2. The other functions subserved by the oculomotor nucleus (contraction of external ocular muscles, accommodation, contraction of iris during accommodation) are very often perfectly performed, though the light-reflex is abolished, and therefore it is not easy to suppose that the nucleus can be the seat of lesion. If the nucleus were diseased, one should expect considerable variation in different cases with regard to the function first attacked. Why one function out of many discharged by the nucleus should, except in rare cases, be affected before any of the others, and, indeed, often without any other being affected at all, is truly remarkable.

The answer to this argument is as follows:

a. It cannot be doubted that contraction of the pupil to light, and contraction during accommodation, or rather during convergence of the visual axes, are subserved by distinct portions of the oculomotor nucleus. Indeed, this nucleus is really an aggregation of small nuclei, each of which has its own appropriate function. Modern research has so far differentiated these nuclei. There is pretty strong evidence that the most anterior part of the third nucleus is a common centre for the three associated actions of accommodation, pupillary contraction, and convergence of the visual axes. Eales published in 1884 a case in which these three functions were lost, whilst all other ocular movements, including the light-reflex, were perfectly preserved.[7]

With respect to the three actions in question, they are so represented in their centre in the following order from before backward: accommodation, pupillary contraction, convergence of visual axes. The most anterior of these nearly corresponds in situation to the most anterior part of the Sylvian aqueduct.

A study of the ocular movements makes it plain that in the voluntary effort to inspect a near object there is first convergence so as to bring the image of the object on the most sensitive part of each retina. Along with this, there is contraction of the pupil to avoid spherical aberration by cutting off the most peripheral rays of light. Finally, there is accommodation to focus the lens for the distance. So far as we can tell, these actions take place simultaneously. But they are not of equal value. Convergence is the essential function, and its centre probably controls the centres for the other two, exactly as the centre for the external rectus controls that for the opposite internal rectus for the purpose of conjugate lateral movement of the eyeballs. A myopic person who, after looking at a distance, tries to inspect an object which is near, and yet beyond his far-point, converges his visual axes, but does not accommodate. In such a case it is not necessary that accommodation should be called into play; but, under normal circumstances, convergence is not enough for

distant vision of a near object, and energy must flow over from the centre for convergence to that for accommodation.

It appears then, to me, that it is strictly in accordance with facts to suppose that the pupil contracts during convergence, owing to activity of the centre for convergence, in the same way as the internal rectus of one eye contracts through activity of the centre for contraction of the contra-lateral external rectus, in connection with a conjugate movement of the eyeballs. On the other hand, pupillary contraction may take place by itself in response to the stimulus of light, though its contraction during convergence is abolished, in the same way as the internal rectus may contract in convergence though incapable of contracting along with the opposite external rectus in conjugate movements.

b. The selective action of disease is one of the most familiar facts in medicine. It is well seen in the case of inflammation of peripheral nerves caused by poisons circulating in the blood. Thus alcohol shows a preference for the mixed nerves of the lower extremities, and concentrates upon them the virulence of its attack. Lead selects, as a rule, the motor nerves of the upper limbs. The diphtheritic poison attacks the nervous mechanism of the ciliary muscle and palate; while in the condition known as peripheral neurotabes the damage may be almost limited to the afferent muscular nerves.

Or again, to take the case of a disease of the central nervous system, progressive muscular atrophy, the upper part of the trapezius muscle commonly survives long after the remainder of it has been destroyed by a lesion of the interior cornua, though occasionally the upper part has been seen to suffer early.

It is, therefore, readily intelligible that a certain morbid process should pick out the particular part of the nervous system which is the anatomical basis of the light-reflex.

c. As a matter of fact, very considerable variety is met with in the motor ocular affections of tabes. I have calculated the following percentages (stated in round numbers) from statistics quoted by Althaus:[8]

Changes of some kind in pupil	in	92	per cent.	of	cases	of	tabes.
Light-reflex lost; pupils act in accommodation	"	78	"	"	"
Pupils quite immobile	"	14	"	"	"
Light-reflex lost; myosis	"	45	"	"	"
" " " mydriasis	"	12	"	"	"
" " " pupil of normal size . .	"	21	"	"	"

With regard to "spinal myosis," Erb found it in 54 per cent., and Althaus found it in over 60 per cent. of tabid patients.

These figures show that loss of the light-reflex is far from being the only affection of the internal ocular muscles in tabes.

I shall now give a short account of a case of my own which was characterized by an exceedingly rare symptom, viz., the converse of the

Argyll-Robertson pupil. That is to say, the pupils contracted in response to light, but not during accommodation.

Disease of Spinal Cord. Accommodation-iridoplegia without reflex iridoplegia. Note of February 9, 1892. Patient, who is a seaman, aged thirty-eight, complains of loss of power and disordered sensation in the legs, with pain in the back. His illness began about five months ago, and has got gradually worse. His first symptom was a feeling that the legs were asleep, and, almost at the same time, these limbs became weak. Three weeks ago, pains—as if a knife were cutting him—began to run down his lower limbs from the hips to the feet. These pains begin quite suddenly, are of great severity, and pass off again immediately. The senses of touch and pain are lost below the knees, and are defective higher up. A pin can be pushed into the muscles below the knees without being felt, but an attempt to do this above the knees causes pain. There is numbness with defective sensation along the ulnar side of the left forearm and in the three inner fingers of the left hand. In order to place one leg across the other, the patient had to lift it with his hands. The knee-jerks are abolished and there is no ankle-clonus. Patient states that at present he is quite uncertain as to what he is walking on, but at an earlier stage of his illness he felt as if he were walking on feathers. His back is so weak that he cannot sit up without support. There is a constant gnawing pain in the lumbar and sacral regions. There is a feeling as if a girdle were tied too tightly round his body at about the level of the anterior iliac spines. For some time back, and certainly since before the beginning of his present illness, he has been troubled with diplopia and dimness of vision. His left eye is the better of the two. With this eye alone, he sees objects naturally; but with the right eye alone he sees double. Tested roughly, the visual field of the right eye appears to be defective. The pupils are of medium size and equal. Both contract slightly but distinctly to light, but not the least contraction is observed in accommodation. There are sometimes headache and occasionally giddiness. The bowels are natural. The urine sometimes comes away before he knows, and attempts to restrain it cause pain over the bladder. There is no gastric disturbance. At an earlier stage of his illness, while patient was still able to stand by himself, he required to keep his eyes open and look at the floor to avoid falling. All venereal disease is denied.

Patient has been a seaman all his working-life, and has of late been principally in the tropics. He is disposed to think that his illness was brought on by three weeks' continuous exposure to cold and wet while his vessel was doubling Cape Horn. He says that the men, on coming on deck, frequently got up to the waist or breast in water from the seas that swept the ship, and sometimes they actually swam fore and aft. On going below they wrung the water out of their clothes, left them hanging beside them when they rested, and on getting up had to put the same garments on again. This went on for three weeks, and the cold during that time was intense.

This patient went into the infirmary for three weeks, and afterward called to see me—about a month after his first visit to me. He was now much better. His pains had gone, the ground felt much more natural to his feet, and he could also walk much better. The knee-jerks

were still absent, and the peculiar pupillary symptom (accommodation-iridoplegia without reflex iridoplegia) was still observable.

This case is clearly one of spinal disease, and not merely multiple neuritis. But it scarcely conforms to the type of tabes dorsalis. Possibly an acute exacerbation supervened in the course of a more chronic disorder of the spinal cord. The former subsided under treatment and left the latter behind. The anatomical basis of this exacerbation was probably a subacute inflammation of the cord, not confined to the posterior columns.

Besides different forms of paralysis of the internal muscles of the eye in tabes, palsy of one or more of the external muscles is rather common, and indeed there may be complete external ophthalmoplegia. We thus find that in locomotor ataxy all the muscles innervated from the ocular motor nuclei show a tendency to become paralyzed.

3. The idea of an analogy between the loss of the knee-jerk and the loss of the light-reflex is very attractive; and as it is practically certain that the former depends (in tabes) on disease of afferent fibres, those who recognize this analogy (Buzzard, Erb, Althaus) naturaly look for a lesion of afferent fibres to explain the latter also.

Certainly, it must be admitted that the pathological basis of locomotor ataxy—with which disease reflex iridoplegia is chiefly associated—is a degeneration of nerve-fibres in the sensory portion of the nervous system. But we must not let this fact carry us too far. In the region of the spinal cord the lesion is in ordinary cases confined to the sensory system; but within the cranium, while the homologues of the posterior spinal nerve-roots suffer, the disease shows a very marked tendency to invade the motor system. Apart altogether from the pupil-reflex, diplopia, palsy of one or more of the external ocular muscles, and more or less complete ophthalmoplegia are phenomena so frequent in tabes as to demonstrate most plainly that the motor side of the nervous system readily suffers within the cranium.

It is now admitted by all that progressive muscular atrophy, bulbar paralysis, and progressive ophthalmoplegia are strictly comparable diseases, being all due to degeneration of motor cells of the anterior horns of the spinal cord, or of homologous structures in the medulla, pons, and mid-brain. Progressive muscular atrophy and bulbar paralysis are often associated in one individual, and though they rarely become complicated with ophthalmoplegia, this is possibly, as Buzzard suggests,[9] because damage to the nucleus of the vagus causes death before such extension takes place. On the other hand, ophthalmoplegia has, quite rarely, become complicated with evidences of change in the bulb. The three diseases, then, are alike in presenting symptoms (in typical cases) of lesion in the lower segment of the motor path. They are also similar

as regards the nature of the lesion. The anatomical changes in the nerve-centres are familiar, so far as progressive muscular atrophy and bulbar paralysis are concerned, and Mr. Hutchinson's case, examined after death by Dr. Gowers, revealed the same kind of lesion in ophthalmoplegia.

Nevertheless one important difference separates muscular atrophy and bulbar palsy on the one hand from ophthalmoplegia on the other, viz., their relationship to syphilis. Syphilis has little, if anything, to do with the two former, from the etiological point of view. In the case of nuclear ocular palsy it appears to be more important than anything else. This has been insisted upon by Mr. Hutchinson all along.

It has been already mentioned that the *ocular* muscular mechanism is the most liable to suffer in tabes when the disease affects the motor system. And as locomotor ataxy is, in the great majority of cases, a sequel of syphilis, it appears to me that the common factor in tabes (with its symptom, the lost knee-jerk) and in reflex iridoplegia may be, not a lesion of the sensory nervous system, but a preceding attack of syphilis.

Additional arguments in support of this view are these: In the first place, the knee-jerk is in excess in ataxic paraplegia, and the pupil-reflex is, as a rule, preserved. At first this seems to be a difficulty, but it turns out to be actually what we should expect, when we recall the fact that syphilis is very rarely the cause of this disease. In exceptional cases, however, there is iridoplegia, and this is—again exactly as we should anticipate—chiefly in syphilitic subjects.

In the second place, loss of the light-reflex is occasionally met with without other nervous symptoms, and in most cases of this kind there is a history of syphilis.

In the third place, general paralysis of the insane is the disease in connection with which, besides locomotor ataxy, reflex iridoplegia is principally observed, and this disease appears to be often, like tabes, a sequel of syphilis.

So far as I am aware, only two writers (Dr. Gowers and Dr. Aldren Turner) have suggested the possibility that the Argyll-Robertson pupil may be due to a nuclear lesion. Even by Dr. Gowers this is implied, rather than stated in so many words. He says that "the loss of function of the internal ocular muscles being persistent, must be ascribed to degeneration of the related centres. But even the light-reflex may return after it has been absent for years, and its loss must therefore depend, at least sometimes, on molecular changes capable of recovery,"[10] Again, he says that isolated loss of reflex action of the iris "is generally due to disease of the centres, degenerative in character."[11] "This has not yet been demonstrated, but hardly admits of doubt because the loss of reflex action occurs under the same conditions as . . . progressive paralysis of the external muscles, the central and degenerative

nature of which has been proved."[12] And again, with regard to the ocular palsies of tabes (including loss of the light-reflex), "we have scarcely any evidence at present of the cause of these palsies, but the fact that total nuclear palsy is sometimes met with makes it probable that these also are often of nuclear origin."[13]

An account of the theory just given, that reflex iridoplegia is probably due to degeneration of motor-cells in the third nucleus, was written out some time before I first discovered that Dr. Aldren Turner recognized this a couple years ago as *one of two possibilities*. He concluded that the lesion is "central," viz., either in the antero-lateral group of Darkschewitsch (small cells in the forepart of the oculomotor nucleus), or in Meynert's fibres which connect the oculomotor nuclei with the optic tracts.[14]

The value, as a good working hypothesis, of the theory that the Argyll-Robertson pupil is in almost all cases due to nuclear changes in the mid-brain, will become still more apparent when we consider the causation of spinal myosis. Doubtless the changes are at first merely nutritional, for the exceptional return of the light-reflex after years of absence is probably to be thus explained, but they tend to become eventually organic.

Reference has not yet been made in detail to the other pupillary reflex, viz., dilatation on painful stimulation of the skin. Erb has shown that loss of reflex dilatation is usually associated with loss of reflex contraction. The route of the efferent fibres has been already described. That of the afferent fibres (if the skin of the neck be stimulated) is by the cervical posterior roots and cervical cord upward. Gowers thinks that where "spinal myosis" exists reflex dilatation is probably, in most cases, lost. That is to say, both conditions are in all likelihood due to loss of the energy which ought to pass from the pupil-dilating centre by way of the cervical cord and sympathetic to the iris.

Remak called attention to myosis as a symptom of cervical tabes in 1864; that is, five years before Dr. Argyll-Robertson described the symptom since known by his name. In view of Budge's researches, which suggested the existence of a cilio-spinal centre in the lower cervical cord, it was natural that, after Remak's observation, this part of the central nervous system should be regarded as the probable seat of the lesion which causes myosis. Dr. Althaus concurs in this view and thinks that the cord in this region, or fibres proceeding from it, are at fault.[15]

Hempel's theory is that a pupil-dilating centre in the medulla is paralyzed.

As Hensen and Volckers have shown that the mydriatic nerves originate in the mid-brain, near the anterior end of the Sylvian aqueduct immediately outside the origin of the myotic nerves, and pass thence through the medulla and cervical cord, it appears to me reasonable to assume that the lesion underlying myosis is in this dilator centre in the

mid-brain rather than the spinal cord. Weighty reasons can be given in favor of this view:

1. Loss of reflex dilatation and loss of reflex contraction would both be due to changes in the nuclei of origin of the nerves controlling the iris. These nuclei are situated in the immediate neighborhood of one another; the two symptoms are often associated; and they both occur under the same circumstances as, and sometimes in combination with, symptoms which are undoubtedly due to changes in the nucleus of the third nerve.

2. The adoption of this theory would do away with the necessity of assuming the very frequent existence of a lesion of *efferent* fibres in the cervical cord at a very early stage of tabes. In the earlier stage of locomotor ataxy, unless in quite exceptional cases, the only motor nerve structures that are affected are those of the eye. These changes are common and are nuclear—so far at least as morbid anatomy has yet taught us. On the other hand, tabes is often advanced in the lumbar enlargement before even sensory symptoms appear in connection with the cervical cord, and still more before motor symptoms occur in the upper limbs; so that, other things being equal, it is desirable to avoid a theory which implies damage to *extracranial motor tracts* very frequently and very early in tabes.

Summary. An endeavor has been made to show that loss of the light-reflex (reflex iridoplegia) and loss of the skin-reflex (cutaneous iridoplegia) are probably both due to degeneration in the nucleus of the third nerve; and that it is unnecessary and undesirable to suppose a lesion of afferent fibres running from the optic nerve to the oculomotor nucleus on the one hand, and of motor fibres in the cervical cord or of a cilio-spinal centre in the cord or medulla on the other. Reasons have been adduced for believing that the analogy between the loss of the knee-jerk and the loss of the light-reflex ought not to be pressed so far as has been done by some authors; and for believing that the Argyll-Robertson symptom ought to be grouped with the other varieties of ophthalmoplegia.

References.

1. *Gaskell:* Journal of Physiology, vii.
2. *Swanzy:* Handbook of Diseases of the Eye., 4th ed., 1892, p. 283 *et seq.*
3. *Swanzy:* Op. cit.; *Obersteiner and Hill:* Anatomy of the Central Nerve Organs, 1890, p. 283.
4. *Buzzard:* Diseases of the Nervous System, 1882, p. 142, note.
5. *Althaus:* On Sclerosis of the Spinal Cord, 1885, p. 156 *et seq.*
6. These various theories, with references, will be found in text-books on Diseases of the Eye, *e. g.*, Swanzy, op. cit.; and on Diseases of the Nervous System, *e. g.*, Althaus, op. cit.
7. Transactions Ophthalmic Society, 1884, p. 300, iv.
8. Op. cit., p. 157.
9. Op. cit., pp. 193, 194.
10. Diseases of the Nervous System, 2d ed., 1892, p. 431, i.
11. Op. cit., 1893, p. 184, ii.
12 Loc. cit., note.
13. Op. cit., pp. 190, 191, ii. These expressions, quoted from Dr. Gowers, are practically the same as he employed in the first edition of his book (1886-1888).
14. Lancet, April 1, 1893, pp. 735, 736.
15. Op. cit., 1885, p. 158.

FURTHER OBSERVATIONS ON THE TREATMENT OF SPASMODIC TORTICOLLIS.

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Many years must of necessity elapse before sufficient material can be gathered to enable us to determine whether by any treatment—medicinal, mechanical, or surgical—perfect and permanent cure of spasmodic torticollis can be promised. The experience of the past would indicate that this result will be attained only in a very modest proportion of the well-established and severe cases. In so important a subject it seems justifiable to report early progress rather than to await the final results, since the latter plan in each case requires a long term of years.

Due allowance should certainly be made in early reports for the time, element. Recoveries, apparently brilliant, either from operation or from other treatment, have been followed by disheartening relapses, and, on the other hand, operations, apparently useless, have paved the way for gradual improvement. In reporting progress we have endeavored to supplement recent reports by the later results of cases previously published.

A word upon the pathology may be pertinent. It has recently been objected that the operation is illogical, because no disease of the nerves has been found. If the trouble results from central irritation, no object, it is maintained, is to be subserved by excision of the nerves.

We do not feel that this is a just criticism. The excised nerves, it is true, have been found normal; it is not improbable, therefore, that we have to do with central irritation. But does this fact contraindicate operation? Before considering this question, we would offer the following theoretical considerations as giving a clue to the process.

There is a limit to the amount of continued work which the muscles can endure. In some instances degeneration follows overuse, as in certain forms of muscular atrophy; in others rebellion is shown by spasm, with or without pain. Of the latter condition, writers' cramp and other occupation-neuroses, as well as spasm of ciliary muscles, are familiar examples. If we stop to consider the amount of work put upon the muscles supporting the head, we realize that it is not inconsiderable. From early life these muscles are called upon during the waking hours for almost continuous use. Within certain limits they are fitted for this use. It is safe to say that a person following an ordinary out-of-door occupation, which does not call for a continued constrained position of

the head, is not likely to suffer from spasmodic torticollis. When, however, the occupation is such as to require fixing the *eye* intently, whatever the position of the head, another element enters into the question. When we attempt to concentrate in this way the vision we find that the first muscular effort is that of steadying the *head*, without which preliminary it is no more possible to fix the vision than to focus a camera resting upon an unsteady tripod.

The pain in the back of the neck which sometimes follows long-continued writing, more especially in those unaccustomed to this form of employment, and particularly in persons of neuropathic make-up, illustrates in a mild degree the rebellion of the muscles to long-continued effort, accompanied by use of the eyes. If hypermetropia be present, this symptom is aggravated. This pain appears with special readiness when the gaze must be fixed intently on distant objects. Even the comparatively short time required for watching a game of football, in which the interest is so great that the ball is closely followed, is sufficient to produce it. Oculists, by the adjustment of proper glasses, have not infrequently relieved persistent pain not only in the neck, but in the back, between the shoulders, and even lower. Pain in the back as a symptom of eye-strain has never been explained. We would suggest that the muscular effort for steadying the head, already alluded to, must of necessity extend to the back, as forming a part of the base of support. The effort here is so diffused, however, among comparatively large muscles, that pain is produced, as a rule, only in extremely delicate persons.

These considerations are, it is true, merely suggestive, tending to explain one variety only of muscular rebellion to overuse, namely, pain. The fact, however, that spasm offers another variety of such rebellion is a matter of common knowledge. Just why one variety appears in one case, the other in another, and a third offers the combination of both, we are unable to explain. The muscles affected would indicate that *certain movements of the head determine the seat of spasm*, rather than that a central irritation of accidental distribution is at the root of the trouble. By far the most common combination is, as we have already stated, spasm of the sterno-mastoid on one side, and that of the posterior rotators on the other. We have seen only one case in which spasm of all the posterior muscles occurred, drawing the head directly backward; in one case spasm of both sterno-mastoids was the principal symptom. This would indicate that the movement of the head determined the onset of the affection, rather than that cerebral irritation was primary. Such a distribution of primary idiopathic disturbance would certainly be extremely improbable.

Why the rotation should begin and continue in one direction rather than the other, we have not yet been able to determine. With reference to the possible connection between ocular defect and the position assumed

in torticollis, Dr. Kilburn has made the following suggestions, which seem to us pertinent: Either hypermetropia or astigmatism may be the predisposing cause of wry-neck. In hypermetropia with one eye, say the left, more affected than the other, the patient by rotating the face away from a near object (in this instance to the left), while tilting the head toward this object, can by this means use as a fixing eye the one requiring the least effort of accommodation. The adoption of this posture removes the left eye (the more hypermetropic) to a greater distance from the point of fixation, and thus lessens the amount of accommodation demanded.

If both eyes are hypermetropic, the stimulus to convergence in excess of the amount required for a given distance, to prevent diplopia, compels a restraining movement on the part of the externi. The nerve-force required by this increased effort on the part of the ocular muscles, added to the labor of an already overtaxed brain, increases the rebellion of the muscles of the neck, to which allusion has been made, whether such rebellion results in pain or in spasm, or in both.

Astigmatism, especially if the principal meridian be oblique, may be a predisposing cause of wry-neck, because a patient with this form of refractive error easily acquires the habit, when reading or writing, of tilting the head to one side, in order to bring his meridian of least refractive error parallel to the vertical lines of the letters.

That the position of the head (even in persons suffering from spasm) is influenced by the refractive condition is, we understand, well recognized among oculists; and insufficiency of ocular muscles seems to be an especially potent factor. Isolated instances in which posture has apparently been replaced by spasm have been cited, but as far as we know no systematic investigation of this point has been instituted. Such investigation would probably lead to interesting, and perhaps to practical results. The demonstration of uniform connection between refractive error, or insufficiency, and spasmodic torticollis would tend to emphasize the importance of correcting such errors before serious symptoms result.

Dr. Cheney has examined the second and third cases reported in this paper with the following results:

CASE II.—

V. O. D. with — 2.25 spherical = 1.
V. O. S. with — 2. spherical = 1.
No insufficiency. Fundus normal.

CASE III.—There is no insufficiency in either eye. There is hypermetropia of a half-diopter in the right eye. The same degree of hypermetropia exists in the left eye, and in addition moderate astigmatism with oblique axis (angle 105° to 110°).

The latter case would tend to corroborate Dr. Kilburn's proposition as regards astigmatism, but does not aid us as regards the theory that the

less hypermetropic eye is turned toward the object of fixation. This patient turned the head to the right, though the left eye (including the astigmatism) showed the greater refractive error; it is not impossible, therefore, that further investigation will develop the exact converse of Dr. Kilburn's proposition in this regard. This would prove equally interesting, and by no means lessen the value of his suggestion.

In the case of the patient alluded to under the question of massage, the spasm involved both sterno-cleido-mastoids, the head being little, if at all, inclined to one side. Dr. Amadon found here astigmatism (0.50) with an axis of 90° in each eye, and esophoria 3°.

In a recent case of combined spasm in which the face was turned to the right and tilted, Dr. Proctor examined the vision at our request and sends the following report:

V. O. D. with — 25 spherical ⊃ — 0.37 cyl. ax. 175 = 1.
V. O. S. with — 0.75 cyl. ax. 5 = 1.
1 (r) hyperphoria, esophoria (distance) 3°.

This patient had used the eyes to excess in embroidery for three years and a half; the head began to turn three years ago. The time of onset is suggestive, but may be, of course, only a coincidence.

Dr. Shattuck has kindly allowed us to report the ocular examination of an extremely interesting case at present under his care at the Massachusetts General Hospital:

The case is that of a man, aged thirty years; occupation, boarding-house keeper. For fifteen years spasmodic movements of the head had existed in varying directions. The prevailing direction is to bend the head to the right, to retract the chin, and *turn* the face to the left. The sterno-mastoids are rather prominent, but no muscles are especially hard. When the eyes are closed the head is fairly quiet. Dr. Amadon reports that there is rotary nystagmus, excepting when the patient is giving close attention to an object directly in front. There are spasmodic contraction of the obliquus and twitching of the brows and lids in fixing the eyes. Esophoria, 9°:

V. O. D. with — 1 cyl. axis horizontal = 1.
V. O. S. with — 0.50 cyl. axis horizontal = 1.

A connection between the eyes and the neck has already been suggested, with a view to treatment rather than to pathology. The hope has been expressed that correction of errors of refraction or the adjustment of lenses for insufficiency may remedy the difficulty. We formerly shared this hope, and our routine treatment for a long time has included the correction of such errors. Results have been negative, and though we have not abandoned the idea of a connection between ocular effort and muscular spasm, we have been forced to the conclusion that the late correction is unavailing, and that continued fixed use of even the normal eye may be the occasion, though not the direct cause, of

rebellion on the part of the muscles supporting the head, especially in the neuropathic individual.

When we speak of the rebellion of muscles, we really mean, of course, rebellion of the cerebral centres supplying them. Granting this pathology, or something similar, is it illogical, in the event of other treatment proving futile, to cut off the supply by severing the nerve-connection? The question has been asked, Would a surgeon think of performing neurectomy for writers' cramp? The answer is: If writers' cramp were a distressing affection, totally incapacitating the sufferer; if, moreover, the spasms were limited to certain muscles; and if, again, removal of the nerve-supply to those muscles in no way impaired the usefulness of the hand, the operation of neurectomy should seriously be considered.

Nor are we dealing with an untried problem. Certain results have been obtained by operation, not very brilliant or numerous, it is true, but, on the whole, more satisfactory than those reached by any other method. Cerebral surgery has not been abandoned, though the percentage of success is lamentably small, especially in brain-tumors. The only question here, as there, is, are we dealing with cases otherwise hopeless? It may now be fairly assumed, we believe, that treatment by drugs is useless, that serious cases cannot bear the restraint of apparatus, and that electricity in all forms is ineffective.

The methods which have, possibly, not received as yet a complete trial, are continuous rest in bed, hypnotism, and massage. Each has its advocates, and we await the final result with interest. In one of four cases Dr. Goldthwait has tried the continued-rest treatment for many months without definite result. The patient found that massage increased the pain—a not uncommon complaint. We understand, however, that he has recently consented to a six months' trial of daily massage, as recommended by Dr. Putnam. At our request Dr. Lindstrom in a number of cases has used massage and passive motion for periods of several months, with favorable results in one case only, and that a comparatively mild and recent one (Case IX. of our former report). We have always regarded massage as a useful adjunct to operation, and have observed rapid benefit from its use in convalescence, even in those cases in which it was previously unavailing.

Dr. Coggshall, in a recent communication, has reported favorable results from persistent massage and passive movement. This will encourage us to renew the effort, though, in view of past experience, it must be admitted, with little enthusiasm. We have begun this trial in the case of spasm of both sterno-mastoids, to which allusions have been made. The disease in this instance, though of ten years' duration, is not painful nor excessive, the patient being a rather delicate young woman, anæmic and overworked. She will also have the benefit of vigorous tonic treatment as well as of rest in the hospital.

Few sufferers appeal more strongly to our sympathies than the class under consideration. Those who have seen cases of moderate severity only, or cases rheumatic in character, can hardly appreciate the pain and distress caused by spasmodic wry-neck of the severe type. Such patients are rendered unfit for occupation or society, resting the head either in the recumbent or semi-recumbent position, or unsuccessfully attempting to relieve the spasm by holding the hand to the cheek. Before many years have elapsed they, as a rule, welcome operation, even though only moderate hope of cure is offered.

With regard to the degree of benefit attained: A certain number of cases have been cured; others have been much relieved; if in others the spasm is not increased, we feel that too timid rather than too heroic surgery has been employed. The question presenting itself to the writers is: How far shall we venture? Is it justifiable to remove on both sides more than the spinal accessory nerves, and the three or four posterior branches? As far as paralysis is concerned, it appears from Gardiner's experience that the excision of these nerves does not impair the ability to hold the head erect; even were this not the case, our opinion is that, rather than suffer such torture as we have witnessed, relief should be welcomed, even at the cost of complete inability to support the head, and with the alternative of a supporting collar.

Coming to the present status of our own experience, we have more favorable progress to report than immediate results would have led us to expect.

Case VII. of our former paper,[1] whose spinal accessory alone was excised, after which operation troublesome rotation persisted for a considerable time, rendering a second operation necessary, is now (after an interval of several years) reported free from spasm. Case XI. suffered from spasm of sterno-mastoid on one side and posterior rotators on the other. The case was so severe that the head had to be constantly upon a rest, and even then the hand was held against the cheek to relieve the tension. As is our custom in these cases, the spinal accessory alone was excised at first, the patient being warned that the posterior branches also would probably require operation later. This case has far exceeded our expectations, for at this time, nearly a year after the operation, the head is held quietly, the patient expresses herself as very comfortable, and the only complaint is of pain, not severe, in the side of the neck.

The patient reported as Case VIII., in which operation was advised, but postponed to enable a more hopeful physician to try electricity and other treatment, finally returned for operation in the spring of 1895. There was at that time marked spasm of the sterno-mastoid and of the platysma-myoides on the one side and of posterior rotators on the other,

[1] The American Journal of the Medical Sciences, vol. cix. p. 36.

the position being similar to that photographed in our previous paper, but with more depression of the chin. The spinal accessory was excised in the usual manner, and the patient advised to await progress for some months before submitting to the more important posterior operation. Up to this time no improvement has been noted.

Case I. of our former communication, one of the most troublesome, in which the improvement after the first operation on one spinal accessory nerve was followed by a relapse and second operation, now carries the head naturally and shows no tendency to spasm.

The tardy nature of the relief in these cases does not militate against the operation as the cause of improvement, when we consider that the patients were growing worse and worse for years up to the time of operation, from which time improvement has been steady, though in some cases gradual.

CASE I.—Mr. E. L., aged thirty-five years, music-teacher; a patient of Dr. Davis, of East Somerville, began to have cervical spasms three years ago. In childhood he had been subject to chorea. Dr. Bullard treated him for a year by means of internal medication. From this treatment he received only temporary relief. An attempt was then made by Dr. Lovett to control the spasm with a head-brace, but the apparatus could not be borne. During the past year massage has been used without benefit. Galvanism has also been faithfully, though unsuccessfully, tried.

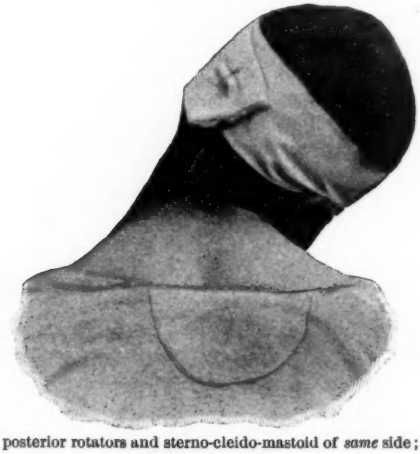
FIG. 1.

Before operation.

The patient was brought to St. Margaret's January 16, 1895. His condition was pitiful in the extreme. The head was so drawn to the

right that the ear nearly touched the shoulder. At the same time there was slight rotation to the right. The head, brought originally by intermittent spasm into this position, became finally more or less fixed by permanent contractions. The head, even when he was profoundly etherized, could not be brought to the erect position. Though the opposing movements were thus limited, spasmodic rotation to the right, with inclination toward the shoulder, continued. The patient was deformed; his sleep was disturbed; he could not work; his discomfort at times amounted to agony; life was hardly worth living. He had tried medicines, rest, massage, electricity, and fixation—all without avail. Far from the attitude of dreading, as the last resort, a surgical operation, he welcomed it; he feared rather that an operation would be refused.

FIG. 2.



Spasm of posterior rotators and sterno-cleido-mastoid of *same* side; unusual. Before operation.

After careful deliberation, and in consideration of the fact that every method of relief other than surgical had been faithfully tried, surgical relief was attempted. The patient was etherized January 26, 1895, and placed on his left side. Even in this position the head was held up halfway to the right shoulder, and the contracted muscles stood out as tense cords and bands. A cut was then made from the external occipital protuberance to the sterno-clavicular notch and every contracted muscle was carefully divided. The muscles affected were the trapezius, the complexus, the splenius capitis, the trachelo-mastoid, the obliquus inferior, the omohyoid, and the sterno-mastoid. The deep muscles inserted into the upper cervical vertebræ—the levator anguli scapulæ and the scaleni—were found slightly contracted, but were not cut.

The operation consisted chiefly of a long open incision by which practically every contracted muscle was divided. The posterior branches of the upper four cervical nerves were cut and avulsed.

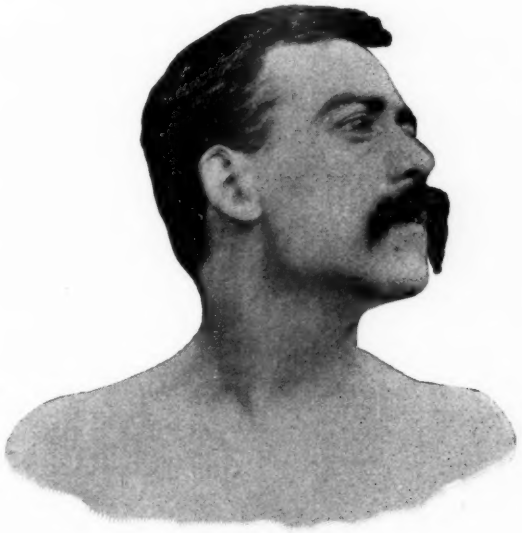
Union by first intention followed this operation. Convulsive movements ceased immediately, except for a slight twitching of the deeper

muscles. After two months' treatment by massage these also ceased. He is now perfectly well. He can hold the head erect, play the piano, and ride a bicycle.

Muscle-division was combined with nerve-section in this case. In Case VII., previously reported, the second operation consisted in complete division of the sterno-mastoid with destruction of the spinal-accessory nerve. The combination of muscle-section with nerve-avulsion, thus carried out with brilliant success, suggested a similar course in the two following cases:

Case II.—Mr. E. F., clerk, entered the Massachusetts General Hospital March 4, 1895. The family history was negative. Up to the beginning of the present trouble he had always been well. Early in September, 1894, he found himself, with no apparent reason for doing

Fig. 3.



Before operation.

so, constantly putting one hand or the other to the head, more often to the right side. The head soon began occasionally to rotate toward the left. This movement increased gradually in force and in frequency. About four weeks before admission to the hospital the head began to be drawn backward as well as to the left. The muscular spasm was accompanied by pain. Various methods of treatment had been used from the beginning of the malady, comprising bromide of potassium, electricity, calisthenics, massage, and hypnotism.

Pain was a prominent and distressing symptom throughout the disease.

It extended over the whole head, and was described as severe; so severe, in fact, especially during massage, that this method of treatment was abandoned, though under it there had been apparently some improvement.

The right sterno-mastoid was found on examination hard and tense, the left trapezius firm and contracted. The trouble began, the patient says, in the region of these muscles. The head was drawn toward the left. All motions of the head were limited.

Fourth day: The patient is being treated in the neurological department with bromide of potassium, electricity, massage, and calisthenics. He is disheartened and anxious for operation, similar methods having been tried unsuccessfully for many months.

Sixteenth day: The patient seems to have more voluntary motion than on entrance; the head is not drawn so far from the median line.

Twenty-third day: He has become anxious and discouraged; he is eager for operation and impatient of delay. Drs. Porter and Warren, in consultation, advise operation.

FIG. 4.

After operation.

About an inch of the left spinal accessory nerve was excised March 31st, through an inch incision made along the anterior border of the sterno-mastoid. The wound was healed by first intention April 5th.

The result of the operation was in the beginning somewhat enouraging. The sterno-mastoid spasm was immediately relieved; the left-sided rotation continued.

In the course of a few weeks spasmodic rotary movements were complicated by a strong backward pull. Examinations were made repeat-

edly by Drs. Putnam and Walton with a view to avoiding, if possible, further operation. Palliative measures were further augmented by hypnotism, a method which was absolutely unavailing. A second operation was not only agreed to, but urged, by the neurologists and others.

April 12, 1895. Second operation. The incision extended from the external occipital protuberance along the anterior border of the trapezius nearly to the clavicle. The posterior nerve-branches of the first, second, third, and fourth nerves were severed, the great occipital alone being spared. The complexus, splenius capitis, and obliquus inferior were completely, the trapezius and trachelo-mastoid partially, severed. The rectus posticus major was not disturbed. The wound united by first intention.

The position of the head was immediately and permanently improved. It was noted in ten days that the "head is carried much straighter; flexion and extension are good. He can rotate the head to the right nearly 45°. The muscles that now pull are the platysma and the omo-hyoid."

May 2*d*. His condition is greatly improved, and movements are much freer. Spasm is now insignificant. The head was done up in plaster-of-Paris, which had to be removed on account of the pain and discomfort which it caused. He was discharged relieved May 3d.

December. He now holds the head somewhat to the right of the median line, but in a fairly erect position. His chief and, in fact, only complaint is the restriction of voluntary motion to the right, due not to muscular weakness, but in part, at least, to the binding effect of the cicatricial tissue. He says that he would rather have all the muscles paralyzed and the head in a collar than to revert to his previous condition.

Third operation, 1896. Slight spasm of the left sterno-mastoid muscle had recurred. The left spinal accessory nerve was found at the outer border of the sterno-mastoid muscle and traced backward and upward. It was found that the nerve had become restored at points of division at previous operation. The nerve was extensively destroyed and the muscle partially severed. This operation removed the last traces of spasm.

Case III.—September 18, 1895. C. B., aged forty-two years, grocer, patient of Dr. Woodbury, of Groveland, and Dr. Anthony, of Bradford, began three or four months ago to have "turning of the head." He noticed it especially when he was writing orders. This turning steadily increased until it became an almost incessant and uncontrollable spasm.

Four months before, in May, 1895, in helping lift a horse that had broken through the barn floor, he felt "something break in the neck." As a result he carried his head for a while on one side. Dr. Richardson found, September 18, 1895, a spasmodic condition of the left sterno-mastoid muscle in conjunction with that of the right posterior rotators. The movements of the head were incessant and painful. In this case, in view of the severity and pain of the spasm, especially in the sterno-mastoid, no palliative measures were advised. The left spinal accessory nerve was immediately excised. The wound healed by primary union. Only slight benefit followed this operation, although the sterno-mastoid was immediately relieved from spasm and the pain lessened. Rotary and backward motions persisted. He was very much discouraged by this result. In October, when he entered the Massachusetts General Hos-

pital for observation, the head was rotated to the right and bent backward. The second day after entrance a plaster helmet was applied, which the patient was unable to endure, after a few hours' trial, on account of extreme pain. Fixation aggravated so intensely the previous discomfort and pain that this method was absolutely impracticable. Opposition to the spasm only increased the violence of muscular contraction.

On the fourth day partial immobilization was attempted by means of sandbags, with the result of increasing the spasm. Manual fixation demonstrated vividly the rebellious nature of the muscular paroxysm. Slight pressure would for a time control this contraction; firm pressure increased it; forcible pressure produced a tonic and painful paroxysm. Dr. Richardson being decidedly averse to further operation, referred the case with full powers to Drs. Putnam and Walton. Both became con-

FIG. 5.

Before operation.

vinced of the inutility of palliation and urged operation upon the posterior rotators. Neither was willing even to consider the usual preliminary measures of massage, calisthenics, electricity, and hypnotism. In view of the remarks of Dr. Goldthwait made upon our previous communication, the patient was then referred to him for observation and for treatment. Dr. Goldthwait reported against palliation; he thought that mechanical treatment would be a waste of time.

Operation. The patient was etherized and placed face downward over the end of the table. The extending muscles were thus put upon the stretch. A long incision was made from the occiput toward the scapula, parallel with the fibres of the trapezius. The muscles were separated and divided until the posterior branches of the four upper cervical

nerves were found, of which all branches were avulsed, including the great occipital. Most of the muscles were also cut across, the trachelo-mastoid alone remaining intact.

December 5th. The head still rotates to the right, though with less violence than before and with longer intermissions. One of the deep muscles, apparently the trachelo-mastoid, can be felt to harden spasmodically during rotation. This is the nerve, the patient states, which has seemed to him the principal cause of the trouble throughout. Massage is begun to-day.

11*th.* Examination shows a strong spasmodic contraction of the trapezius and of the trachelo-mastoid. It is proposed to treat these muscles persistently by massage and by other remedies; in the event of failure after a reasonable time, free division of the remaining fibres will be made.

13*th.* Daily massage has been continued up to the present time. From the beginning of this treatment the spasm was considerably relaxed.

14*th.* The head is now fairly quiet. The trapezius and trachelo-mastoid spasm seems to have largely disappeared, though after being up and about for some hours it reappears to a moderate extent.

This patient, like the last, expresses himself as greatly pleased, and states that rather than return to his previous condition he would choose to have all muscles paralyzed and wear a collar.

He adds that he was formerly so helpless that he could not sign checks, dress or feed himself. He gave his chief-clerk power of attorney for the former purpose, and required the assistance of his wife for the latter. When he attempted to go through a door he was in danger of striking the doorway. He used to sit holding his head in both hands, with elbows resting on something. He once attempted to ride, resting the elbows on the seat before him, but had to discontinue after riding a mile on account of distress.

This patient was discharged December 14th. Whether this improvement is permanent or not we cannot say. The absolute immobilization by the operation of the greater portion of those muscles which produce the spasms may have relieved, in some obscure way, the one or two remaining muscles. It seems not impossible that those muscles remaining unimproved in an extensive co-ordinating group, the others of which have become for the time being paralyzed, may through their altered nerve-supply, or from some other cause connected with the operation, have been unable further to give expression, by spasm or otherwise, to the central or other source of irritation; they may be too limited in size and in function to carry the burden of rebellion before distributed among so many muscles. On the other hand, we frequently see spasms shift from a single muscle to an extensive group, as in all those cases in which the posterior rotators become involved after avulsion of the spinal accessory. The burden of giving expression to the irritation is thereby divided, but we have never seen the spasm go further than this.

Benefits received from an operation *per se* are likely to be observed in those cases only in which massage, electricity, gymnastics, and especially hypnotism have been most helpful—cases in which operative measures are seldom needed. Excepting in one case (XI.), we have failed to observe improvement in any set of affected muscles by the cure by operation of an associated group. On the contrary, spasm, as a rule, becomes more pronounced; for example, paralysis of the left sterno-mastoid and trapezius may be followed by increased posterior spasm, or it may even be followed by the spasm of these muscles when none existed before. It can hardly be said, therefore, that operative measures *per se* have any favorable influence upon allied groups of real muscular spasm.

In view of a recent discussion of this subject, renewed hope of the benefits of massage, gymnastics, and hypnotism has been encouraged, and we await with interest further trials of these methods in aggravated cases. Surgical measures should certainly not be instituted until every rational means of non-operative treatment has been exhausted, unless the case is too well established and severe to justify delay. It may then be resorted to, not as an untried experiment, but as a rational surgical procedure, based upon a by no means discouraging experience.

A CONTRIBUTION TO THE STUDY OF LACTATION-ATROPHY OF THE UTERUS.

By Hiram N. Vineberg, M.D.,
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It is singular that in this country the subject of lactation-atrophy of the uterus has received absolutely no attention. What is even more singular is that the condition seems entirely to have escaped observation. The several excellent works on gynecology emanating from American authors are exceptionally silent on this subject. A slight incidental notice is to be found in the *The American Text-book of Gynecology*,[1] in the following terms: "The condition known as hyper- or super-involution follows labor and is due to causes unknown. The natural involution of the uterus following labor reduces the size of the organ slightly below its normal condition, but subsequently within a few weeks this loss is regained."

In *The American System of Gynecology*,[2] Dr. T. A. Reamy, in the article on subinvolution, briefly states: "After parturition the uterus

[1] W. B. Saunders, Philadelphia, 1894, p. 243.
[2] Lea Bros. & Co., 1887, vol. i. p. 645.

rapidly decreases in size until in four to six weeks it has reached its former weight or as nearly so as it will ever do."

The opinion that prevails and the teaching that is promulgated are that a uterus that has ever borne a child never returns to its virginal size unless as the result of pathological changes. Thus says Lusk, in *The Science and Art of Midwifery*:[1] "In six weeks the process (involution) usually reaches the end, though the uterus remains ever after somewhat larger and more rounded than in nulliparæ." In the same strain speaks S. C. Busey in *The American System of Obstetrics*:[2] "A womb which weighed more than two pounds immediately after labor, will not weigh more than three-quarters of a pound at the beginning of the third week, and usually at the close of the sixth week the process is completed, but the uterus never resumes the size and shape of a nulliparous organ."

Parvin, in his text-book on *Obstetrics*, does not mention the subject.

The condition to which I wish to draw your attention is not that which is usually known here as *hyper-involution*, a condition very rarely met with and usually permanent. It is to that form of hyper- or super-involution accompanying lactation, with or without amenorrhœa, and in which the reduction in size is temporary only, the return to the normal size being in some cases dependent upon the cessation of lactation, in others again regeneration of the uterine tissue occurring while lactation is still going on.

My attention was especially drawn to this condition a few years ago when I first took charge of my service in the gynecological department of the Mt. Sinai Hospital Dispensary. A great number of nursing-women of all periods present themselves there for treatment suffering from a variety of symptoms. As I made it a rule, from the outset, to examine every woman that came, no matter how trivial the complaint, I was soon struck with the small size of the uterus that I encountered in a great number of the nursing-women. In the majority of cases there was no or only a trifling lesion, and the symptoms complained of could be referred to constipation, indigestion, malnutrition, or to the function of lactation itself. A more extended observation soon taught me that the atrophy was only temporary, as the uterus would sooner or later increase in size and the function of menstruation be re-established. With the recurrence of menstration the process of gestation in many cases would recur; in others, again, conception would take place without the reappearance of the menses. My hitherto views, based on what I had been taught regarding puerperal involution, had to undergo a change, and I sought enlightenment in the literature on the subject. This as yet is very meagre, and is to be found chiefly in the German journals The two authors who have written the most extensively on the subject

[1] D. Appleton & Co., 1884, p. 233.

[2] Lea Bros. & Co., 1889, vol. i. p. 522.

Engström, of Sweden, and Thorn, of Germany, are at variance as to the significance of the atrophy, whether it is to be considered as pathological or as normal. Engström holds that it is consequent upon the lowered vitality and the anæmic condition usually accompanying lactation. He would place it in the same category as the atrophy that occurs in constitutional disease, such as phthisis, syphilis, etc. Thorn, on the other hand, while admitting that these conditions may play a *rôle*, in some instances, to a greater or less degree, is firmly convinced that the process is a normal one and may be met with in the most robust individuals under the most favorable hygienic surroundings.

The result of my own investigations I shall now place before you, and, as you will see, they serve to confirm Thorn's views.

The first question we have to ask ourselves is, What must we consider as atrophy of the uterus? P. Müller, in his excellent monograph on the physiological and pathological involution of the puerperal uterus, has given the following answer. He says a uterus may be termed atrophic when after the puerperium it assumes a size less than that of the virginal organ. But a uterus that has once gone through the puerperal process, and when the period of lactation has elapsed is generally somewhat larger than the non-parous uterus; *i. e.*, its cavity is from 1 to 1.5 cm. longer, and its walls are about 0.5 cm. thicker. The parous organ, therefore, should give a measurement of from 7.5 cm. to 8 cm. We must, therefore, consider as atrophic or hyper-involuted that uterus which has borne a child and which in any of its dimensions measures less or the same as that of a healthy multipara (Engström). But when the uterus is much smaller than the multiparous organ, when it is only two-thirds its size, or, as in some cases observed by me and others, not more than half its size, then the term atrophy is certainly appropriate. We know that certain pathological processes during the puerperium, such as severe septic infection of the uterus, ovaries, or parametria, may result in atrophy of the uterus. These cases are excluded from this communication. I will only consider such cases in which the puerperium was normal or nearly so.

Two varieties of lactation-atrophy are recognized—the eccentric and the concentric. The term eccentric atrophy is applied to a uterus whose cavity is of the same depth as the ordinary parous organ, but whose walls are appreciably thinner and more flaccid. When the organ is decidedly smaller in all its dimensions, when the cavity from the fundus to the border of the anterior lip of the cervix does not measure more than 4.5 cm. to 6.5 cm., and the uterine walls are thinner than normal, though they may not be flaccid, the term "concentric atrophy" is employed. Concentric atrophy may, therefore, be considered as only a higher grade of the eccentric variety. As may be anticipated, various grades between the two varieties are met with. The terms are merely arbitrary, but serve the useful purpose of concisely designating the de-

gree of atrophy. It is not uncommon to meet with an excentric atrophy which under continued lactation becomes concentric.

According to my observations, the process affects the body and the cervix equally. In some of my cases, it is true, the cervix was much larger in proportion than the body, but it seemed to me that the enlargement was due to a pathological lesion, such as a bad laceration or an accompanying endocervicitis. These observations harmonize with those of Engström and Müller. Thorn, however, states that in his cases the cervix remained unaffected and that it showed atrophy only in the very highest grades when the external genitalia and the abdominal walls may also become involved in the process. Gottschalk drew similar conclusions from his cases.

Both Engström and Thorn agree that the ovaries do not undergo any appreciable atrophy unless in a few very marked cases. Kleinwächter asserts that they were markedly atrophied in all of his cases, but his cases do not truly belong to lactation-atrophy, inasmuch as they were instances of permanent hyper-involution following the puerperium and lactation.[1] In none of my cases could I detect by bimanual examination any notable decrease in the size of the ovaries. This was in spite of the fact that the majority of women afforded a good opportunity for such an examination, having flaccid and yielding abdominal walls.

What is the earliest period at which we may meet with lactation-atrophy? Reluctantly, on account of their source, I must concur with Hansen in excluding the measurements of the puerperal uterus given by two American authors, Drs. Sinclair and Richardson, in 1878 and 1879.[2] They are ostensibly unreliable, but in justice to these gentlemen it must be added that the measurements were not made by themselves, but by the then incumbent house-surgeons. These measurements give already as early as the tenth day a depth of the uterine cavity of only two inches. Some measured only one and three-quarters inches on the fifteenth day. In looking over these tables one is amazed at the circumstance that in the majority of instances a higher measurement obtained from the twentieth to the thirtieth day than from the tenth to the fifteenth day. Hansen explains this by the observation made by Börner, that from the tenth to the fifteenth day the puerperal uterus generally lies in acute anteflexions. He says it is evident that the sound was arrested by the flexion at the internal os, and hence denoted the depth of the cervix only. This observer, having in view the medico-forensic aspect of the subject, made careful measurements in a large number of puerperal women of various periods, ranging from the second to the twelfth week. One series comprised 76 healthy nursing-primiparæ. Already at the sixth week

[1] What is remarkable about his observations is that they comprise 28 of such cases in 3000 polyclinic gynecological cases.

[2] Transactions of the American Gynecological Society, vols. iv., vi., vii.

many gave a measurement only of 7 cm., and in three the uterine cavity measured only 6.5 cm. The minimum measurement was 5.4 cm.

P. Müller obtained a measurement of 6.5 cm. as early as the twenty-first day. His minimum (5 cm.) occurred only after the sixth week.

My own measurements embrace the cases (51 in number) seen by me during the past eight months, and are tabulated in the appended tables. The period of lactation varied from seven weeks to twenty-four months. They are the only ones recorded covering so extensive a period of lactation. They were all made by myself, and in many instances two or more measurements for purposes of control were made on the same individual. The size, shape, consistency and position of the uterus were always first noted by a careful and thorough bimanual examination. To my mind this examination by one who is in the habit of examining daily a large number of women is eminently of greater value than the measurement with the sound. By it alone, without hearing the history from my assistants, I could frequently recognize that the woman was nursing. Th determination of cases of excentric atrophy must depend upon this examination solely, for the sound would only indicate a normal depth. After the bimanual examination a bivalve speculum was passed, the anterior lip caught with a tenaculum, and a sound, rendered aseptic with the flame of a spirit-lamp, was passed to the fundus. The sound was held in position, while the speculum was withdrawn; the index-finger was then passed to the anterior lip of the cervix and the sound withdrawn with the finger held firmly against it. Even in a matter apparently so simple the greatest care in details is necessary to avoid error. For instance, care must be taken that on removing the speculum the knob of the sound does not slip away from the fundus. The measurement should be taken from the border of the anterior lip, for in case of a tear of the cervix, if the finger be applied to its side, the tip of the finger would enter the cervical canal for a greater or less distance and a shorter measurement would be obtained than actually existed. It has frequently been my experience to obtain a greater depth of measurement with the sound than I had anticipated from the prior bimanual examination. Doubtless the uterus becomes somewhat lengthened by drawing on its anterior lip with the tenaculum. The minimum measurement obtained was 4 cm., the maximum was 8 cm.

In order to determine what part, if any, anæmia and general debility played in the causation of the process in question, the color of the superficial mucous membranes was noted in each case as well as the general appearance of the woman. These are designated in the tables by one or two terms for brevity' sake. To test this matter more fully and accurately an examination of the blood was made in fourteen of the patients by my friend, Dr. Max Rosenberg. I wish here to express my deep sense of gratitude to the doctor for his painstaking labor and for the

thoroughness with which the examinations were made. A much greater number of the women were requested to present themselves to Dr. Rosenberg, but only the above-stated number complied with the request. Inasmuch as the desire was for an impartial investigation no attempt at selection of the cases was made for this examination.

If we assume that about 4,500,000 is the normal number of red blood-corpuscles in the female (Vierordt, Laache[1]) there was only one case (No. 40) in which the number was much below this. In 8 of the cases it far exceeded that average; in the remaining 5 cases it was only slightly below it. It will be observed that in cases Nos. 18, 21, and 40 some discrepancy obtains between the condition as noted by me and the result of the blood-examination. In cases Nos. 18 and 21 I noted "anæmia," while the number of red blood-corpuscles was 4,975,000 or 5,470,000, and the percentage of hæmoglobin 70 and 80 per cent. respectively. In case No 40 the general appearance is said to be good, while the counting of the red blood-corpuscles gave a number of only 3,685,000, and the hæmoglobin a percentage of 65. It is unnecessary to comment upon this any further than to say that the counting of the red blood-corpuscle must be considered an essentially safer guide than the ocular inspection of the mucous membranes, or the impression gained from the rapid survey of an individual.

From a study of both tables it will be seen that anæmia and debility were not important features in the production of the atrophy.[2] It is true that some of the women presented the appearance of anæmia to a greater or less degree, but the hyper-involution was no more fully developed in them than in those of a healthy and robust appearance. On the contrary, of the fourteen women in the second tabulated series, the smallest uterine measurement (4 cm.) was found in one (Case No. 21), whose red blood-corpuscles numbered nearly 5,500,000 in a cubic mm., and in whom the percentage of hæmoglobin was 80. Still further during my investigations I came across several nursing-women not included in the tables who showed very marked anæmia and lowered vitality, but in whom, instead of finding a small uterus, I found a uterus considerably enlarged; in other words, the condition known as subinvolution. The administration of iron and the application of pelvic massage thrice weekly for three or four weeks in these cases would usually result in

[1] Vierordt's Medical Diagnosis. W. B. Saunders, Philadelphia, p. 275.

[2] Of course, it must be admitted that the disproportion between the number of red blood-corpuscles and the quantity of hæmoglobin corresponds with what obtains in chlorosis, but where the percentage of hæmoglobin is above 60 per cent. a chlorotic condition can scarcely be said to exist. The difficulty in determining the exact quantity of hæmoglobin must also be taken into account. It can only be accurately made by quantitative spectrum analysis (K. Vierordt). I give the figures as they are furnished to me, leaving it to future investigators to decide this very important matter. My own belief at the present time is that chlorosis was not present, save with one or two exceptions, in the women in whom the blood-examinations were made.

No.	Age of patient.	Married.	No. of children.	Age of baby.	Menses.	General appearance.	Bimanual examination.	Depth of uterine cavity.	Local lesion.
	Years.	Years.						Cm.	
1	30	12	5	3 mos.	None.	Good.	Two-thirds normal size.	5.0	None.
2	21	1	1	3 "	"	Very good.	Some smaller.	6.5	Slight endocervicitis; cervix small.
3	22	3	2	6 "	"	" "	Half size.	5.0	Slight erosion on anterior lip.
4	23	4	2	6 "	"	" "	Small, and thin walls.	5.5	None.
5	20	2	1	11 "	"	" "	Cervix large; body small.	5.5	Moderate endocervicitis.
6	29	9	5 1 misc	5 "	"	Very robust	Cervix very large; body small.	6.0	Deep bilateral tear.
7	27	4	3	4 "	"	Good.	Cervix normal size; body small.	7.0	None.
8	25	6	4 1 misc	3 "	Metrorrhagia.	Very good.	Cervix very small; body half size.	4.5	Endometritis.
9	29	10	5	8 "	None.	Very robust	Very small.	4.5	Retroversion.
10	32	14	5	24 "	Set in 3 months ago.	Good.	Small.	6.5	None.
11	39	18	10 1 misc	4 "	None.	Very good.	Two-thirds size.	5.0	"
12	31	12	8	8 "	"	" "	Very small.	5.0	"
13	40	20	6	6 "	"	" "	Very small.	5.0	"
14	22	3	1	5 "	"	Robust and full color.	Small, and thin walls.	6.5	"
15	23	2	1	12 "	Set in a week ago.	Slightly anæmic.	Very small.	5.5	Retrodisplacement.
16	27	8	4	15 "	None.	Good.	Half normal size.	4.5	None.
17	25	3½	2	9 "	"	Good color and robust.	Half normal size.	4.5	"
18	20	2	1	6 "	"	Slightly anæmic.	About normal size.	7.5	"
19	34	15	6 1 misc	6 "	"	Very good.	Cervix large, body very small.	4.5	Moderate endocervicitis.
20	...	...	...	.....	"	Very anæmic.	Less than half size.	4.0	
20[1]	...	...	...	.....	.....	Good color.	Less than half size.	4.0	
21	23	2	1	8 mos.	None.	Anæmic.	Less than half size.	4.0	
21[2]	"	...	...	.....	Set in a month ago.	"	About normal size.	7.5	
22	30	8	4	11 mos.	None.	Good.	Rather small.	6.5	Retroversion, second degree.
23	27	10	3	8 "	"	Very good.	Very small.	5.5	
24	23	12	6	4 "	"	Good.	About half size.	4.0	
25	23	4	2	4 "	"	Very good.	Very small.	5.0	Bilateral laceration.
26	26	5	3	8 "	"	Plethoric.	Cervix large, body very small.	4.0	
27	23	3	2	4 "	"	Fairly good	Cervix large, body very small.	4.5	
28	37	18	7 6 misc	8 "	"	Very anæmic.	Thin walls.	6.5	Retroversion, first degree.
29	22	2	1	2½ "	"	Very good.	Cervix very small, body small,	5.5	

[1] Six weeks later, during which time took iron.

[2] Two months later.

No.	Age of patient.	Married.	No. of children.	Age of baby.	Menses	General appearance.	Bimanual examination.	Depth of uterine cavity.	Local lesion.
	Years.	Years.						Cm.	
30	25	2	1	12 mos.	Set in 4 months ago.	Slightly anæmic.	About two-thirds normal size.	6.0	
31	27	8	4 1 misc	9 "	None.	Anæmic.	Cervix large, body thin walls.	7.5	Bilateral laceration.
32	22	1	1	7 wks.	"	Good.	Thin walls and below normal size.	6.5	
33	29	10	5	7 mos.	"	Very good.	Very small.	5.0	Retroversion, first degree.
34	26	6	4	10 "	"	Good.	Small.	6.0	
35	30	10	5	7 "	"	Very good.	Very small.	6.0	Retroversion, first degree.
36	21	2½	2	3 "	"	" "	Very small.	6.0	
37	22	2	1	8 "	Profuse for 2 months.	Very anæmic.	Flabby and thin walls.	8.0	
38	33	10	4	14 "	None.	Good.	Two-thirds normal size.	4.5	None.
39	25	6	2	17 "	Set in 4 months ago.	Fair.	Slightly below normal.	6.5	"
40	24	1¼	1	11 wks.	None.	Very good.	Very small.	5.0	"
41	27	8	4	15 mos.	Set in 2 months ago.	Fair.	Two-thirds normal size.	5.0	"
42	30	15	8 1 misc	3½ "	None.	Good.	Small.	5.5	Erosion of cervix.
43	22	2	1	5 "	"	Anæmic.	Small.	5.5	None.
44	34	16	5	8 "	"	Very good.	Small.	5.0	"
45	38	23	7	3 "	"	Very anæmic.	Thin walls.	7.0	"
46	25	1	1	7 wks.	"	Very good color.	Not easily defined.	6.5	"
47	27	5	2	8 mos.	Set in 3 weeks ago.	Very good color.	Small.	6.5	Bilateral laceration.
48	30	2	1	7 "	None.	Plethoric.	Not palpable owing to thick abdominal walls.	6.0	Bilateral laceration.
49	30	8	5	6 "	"	Fair.	About half normal size.	5.0	None.
50	25	1	1	7 wks.	"	Very good.	Below normal size.	6.5	"
51	38	18	7	13 mos.	"	Fair.	Half size.	4.5	Endometritis.

	I. Case No. 2.	II. Case No. 3.	III. Case No. 6.	IV. Case No. 8.	V. Case No. 14.
No. of red blood-corpuscles . . . (Estimated according to Thoma-Zeiss, 64 squares).	5,050,000	5,250,000	4,375,000	4,250,000	5,100,000
Percentage of hæmoglobin . . . (Estimated according to Fleischl).	70 per ct.	70 per ct.	70 per ct.	70 per ct.	75 per ct.
Absolute quantity of hæmoglobin .	9.8 gm.	9.8 gm.	9.8 gm.	9.8 gm.	10.5 gm.
Size of uterus . . . . . (Estimated bimanually.)	Smaller than normal	Half normal size.	Cervix large body small.	Half normal size.	Small and thin walls.
Depth of uterine cavity . . . . (Measured with sound.)	6.5 cm.	5.0 cm.	5.5 cm.	4.5 cm.	6.5 cm.

	VI. Case No. 18.	VII. Case No. 21.	VIII. Case No. 25.	IX. Case No. 29.	X. Case No. 34.
No. of red blood-corpuscles . . . (Estimated according to Thoma-Zeiss, 64 squares).	4,975,000	5,470,000	4,760,000	4,150,000	6,100,000
Percentage of hæmoglobin . . . (Estimated according to Fleischl).	75 per ct.	80 per ct.	70 per ct.	65 per ct.	85 per ct.
Absolute quantity of hæmoglobin	10.5 gm.	11.2 gm.	9.8 gm.	9.1 gm.	12.1 gm.
Size of uterus . . . . . (Estimated bimanually).	About normal size.	Less than half size.	Very small.	Very small.	Small.
Depth of uterine cavity . . . . (Measured with sound.)	7.5 cm.	4.0 cm.	5.0 cm.	5.5 cm.	6.0 cm,

	XI. Case No. 40.	XII. Case No. 49.	XIII. Case No. 50.	XIV. Case No. 51.
No. of red blood-corpuscles . . . (Estimated according to Thoma-Zeiss, 64 squares).	3,685,000	4,150,000	6,500,000	4,150,000
Percentage of hæmoglobin . . . (Estimated according to Fleischl).	65 per ct.	65 per ct.	80 per ct.	60 per ct.
Absolute quantity of hæmoglobin	9.1 gm.	9.1 gm.	11.2 gm.	8.4 gm.
Size of uterus . . . . . (Estimated bimanually.)	Very small.	Half normal size.	Below normal size.	Half size.
Depth of uterine cavity . . . . (Measured with sound.)	5.0 cm.	5.0 cm.	6.5 cm.	4.5 cm.

improved color and health of the patient. Coinciding with this general improvement there would occur a diminution in size of the uterus and a condition of hyper-involution would be reached. The following are typical examples of many such cases:

Case I.—Mrs. K., a healthy, though undersized, woman, aged twenty-four years; married five years; was delivered of her third child by me twelve weeks ago. She had a normal and easy labor. There was the usual amount of blood lost at the end of the third stage. Her puerperium was afebrile and uneventful. She was allowed to sit up on the twelfth day. She nursed her baby, a robust boy, who required considerable nourishment. At the end of the seventh week she was markedly anæmic, the superficial mucous membranes being almost white. The uterus, on bimanual examination, was about the size of the gravid organ at the sixth week. She was given iron, enjoined to drink considerable milk, and the uterus was *masséed* three times weekly. Now, at the expiration of five weeks' treatment, though she has continued to nurse her infant, she has good color and feels much stronger. The uterus is soft, is smaller than the parous organ, and by the sound gives a measurement of 6.5 cm.

Case II.—Mrs. O., aged thirty-four years; married fifteen years; seven children; was delivered of her last child, which she is nursing, six weeks ago. She had a normal labor and puerperium, but was exceedingly anæmic and is very feeble; could scarcely stand for ten minutes

without trembling from sheer weakness. The uterus was about the size of the gravid organ at the sixth week, and measured 9 cm. She was treated with pelvic massage, ichthyol tampons, and given the tincture of chloride of iron and strychnine internally. Six weeks later, in spite of the continued nursing, she had good color, felt quite strong, and was able to do her housework. The uterus now measured only 7 cm.

The next case, though not attended with lactation, furnishes, however, incontrovertible evidence that constitutional disease and anæmia do not always bring in their train hyper-involution of the uterus as held by Engström and others.

Case III.—Mrs. Z., the wife of a colleague, at about the seventh month of her first pregnancy was attacked with dry pleuritis. For the next five or six weeks she had fever off and on and pain in the right side of the lower part of chest and upper part of abdomen. Evidences of effusion were noticed at about the eighth month. She went to full time, having a quick and easy labor. There was not much loss of blood at the end of the third stage. The effusion in the pleura was slow of absorption, and on the tenth day of the puerperium thoracentesis was done and about 1 litre of clear serous fluid withdrawn. There was some reaccumulation of the fluid, which gradually became absorbed in the course of several weeks. During this time the patient was very anæmic and considerably emaciated. A tubercular condition was suspected. At the end of the fifth puerperal week the uterus was still large, being the size of the gravid organ at the eighth week. Uterine massage was now employed for a couple of weeks, at the end of which time the uterus was slightly larger than the non-parous uterus. The patient had in the meantime gained considerable strength and was decidedly less anæmic.

Th. Hansen, in two cases of advanced pulmonary phthisis, also found tardy involution. In the one case the uterus measured 8.5 cm. at the end of the eighth week. Heschl (quoted by Hansen) had a similar experience in meeting with subinvolution in severe constitutional diseases. Of course, the writer does not lose sight of the fact that, in general, constitutional diseases, especially pulmonary phthisis and syphilis, are attended with uterine atrophy.[1] But their influence on post-puerperal involution must be decided by further investigation. The menses may reappear while lactation is still going on and in the presence of more or less atrophy. This occurred in nine of the cases recorded in the tables. Hence the re-establishment of the menstrual process cannot always be taken as a sign of the complete regeneration of the uterus; in other

[1] The degree of uterine atrophy attending pulmonary tuberculosis is, in my opinion, generally overestimated. The amenorrhœa usually taken as an expression of this condition does not occur as an early symptom save in young girls with poor general development, in which it may safely be assumed there had been some arrest of uterine development. In examining several women, inmates of the Montefiore Home for Chronic Invalids, in reference to this point, it was learned that amenorrhœa occurred only when the disease was far advanced. Even in the third stage, with small and large cavities in both lungs, and very pronounced general anæmia, the uterus was found to be reduced in size only to a moderate degree. The minimum measurement of the depth of the uterine cavity obtained was 6.5 cm.

words, the growth of the mucous membrane does not necessarily go hand in hand with the growth of the muscular tissue. Kleinwächter met with some cases of even profuse menstruation in which the uterine atrophy was quite marked. In common with other observers, I have seen a number of instances in which conception had taken place during lactation without the intervention of the menstrual period.

Case I.—A. H., aged twenty-eight years; married eleven years; six children; conceived while nursing the fifth child. Is now nursing the sixth child, which is ten months old. She is two months pregnant. Has not had a menstrual flow for four years.

Case II.—B. A., aged thirty years; married twelve years; six children; is nursing last child, which is seven months old. Has not had any menstrual flow for over sixteen months. Is now pregnant eight weeks.

Our views regarding the anatomico-pathological changes of involution must undergo a radical change in the light of more recent researches. We can no longer accept the teachings of Heschl and Kölliker that the muscle-fibres of the puerperal uterus completely disappear by a process of fatty degeneration, and that new muscle-fibres develop from without inward. M. Saenger has shown that fatty degeneration plays but an insignificant part in this truly mysterious process of nature. The result of his investigations was forestalled by Luschka, who in his work on anatomy expresses similar conclusions to those reached by Saenger. According to these two observers, a true atrophy of the individual muscle-fibres occurs. Saenger found the length of the muscle-fibre at the end of the fifth puerperal week to be 24.4 mm., while that of the normal uterus was 34.1 mm. The breadth of the muscle-fibre at the same period he found to be 6 mm., and that of the normal uterus 5.1 mm. The greater breadth, he says, is due to the fat-drops which swell out the individual muscle-fibre. He goes on to add "that the index of length of the fibres after complete involution is less than that of the normal uterus, harmonizes with the well-known fact that the entire uterus, especially in nursing-women, is often smaller than is normal; in other words, there is a physiological post-partum super-involution or atrophy of the uterus."

It would appear, therefore, that the function of lactation promotes this physiological process. How it does this receives various answers from different observers. Engström says that it does so by inducing a marked degree of general anæmia, and that the atrophy is due to the consequent local anæmia of the sexual organs. Gottschalk explains it by the frequent irritation of the nerves of the mammary glands which the act of nursing calls forth. This irritation of the mammary nerves acts reflexly upon the nerves of the uterus and pelvic organs, causing a contraction of the bloodvesels, and thus producing a local anæmia. Thorn expresses

somewhat similar views, classing it under the category of reflex trophic neurosis. But if we are willing to accept Saenger's observations, it seems to me the explanation is a simpler one. We know positively from clinical observations, that the irritation of the mammary nerves by the act of nursing shortly after birth will reflexly cause contraction of the uterine muscular fibre. We must, therefore, be willing to grant that the same thing occurs later, though it is not so evident to us, because the uterus is no longer large and flabby and contractions of the organ are no longer palpable to our examining hand. That the muscle-fibres may be acted upon directly through the channel of the nerve-communications can be readily understood from Herff's researches.[1] They demonstrate that the greater part of the uterine nerves pass directly to the muscular tissue, forming in it by anastomosis a coarse network. From this network fibrils of moderate thickness arise, which divide up finally in the finest axis-cylinders. These are connected with the individual muscle-fibres in a peculiar manner, so that each axis-cylinder communicates with several muscle-cells before it ends in the terminal ganglion. It is reasonable to assume that the bloodvessels also take some part in the process, in accordance with the views of the author just quoted.

From that which has gone before it may be readily inferred in what light the writer regards the prognosis of lactation-atrophy. Being, in his opinion, a normal and physiological process, its occurrence is earnestly to be desired.[2] Certainly it may be carried too far, and permanent hyper-involution follow. But that this is a frequent contingency is contrary to his experience, which in this respect corresponds to that of Engström[3] and Thorn. During the past three years I must have seen in dispensary practice at least 200 cases of lactation-atrophy, and I can recall only two or three instances of permanent hyper-involution.

I met with one case in which the regeneration of the uterus was evidently very slow:

T. B., aged twenty years; married three and a half years; one child two years and three months ago; menstruated at thirteen years, and was regular from the outset. Has not menstruated since the birth of her child, twenty-seven months ago. Is now two months pregnant.

[1] Über das anatomische Verhalten der Nerven im uterus und in den ovarien des Menschen (Münch. Med. Woch., 1892, No. 4).

Über den feineren Verlauf der Nerven im Eierstocke des Menschen (Zeit. für Gyn., Bd. xxiv. Heft 2).

[2] "After removal of all products of disintegration we still have remaining the same muscle-fibre which only goes through a kind of moulting process, in order to return to its previous, yes, to a more vigorous fulness, to its previous constant, but deliberate routine tissue-changes after it has reached the extreme degree of puerperal diminution which has reduced it to a size somewhat smaller than the normal muscular fibre of the uterus." (M. Saenger.)

[3] Engström out of 87 cases met with only 3 cases in which restitution had not occurred two or three years after labor. The women had nursed eleven, fourteen, and twenty-four months, respectively.

Other observers have seen similar cases. The question that now occurs to us is, Does post-puerperal hyper-involution ever take place independently of lactation? If we base our reply on the anatomico-pathological researches of M. Saenger already referred to, we must answer in the affirmative. I have but few data relative to the question:

CASE I.—Mrs. A., a primipara, was delivered by me with forceps of a female child on July 27, 1895. The labor was tedious on account of rigidity of the soft parts.

There was a smart post-partum hemorrhage, which, however, was readily arrested by the usual means. An attempt to nurse the child was made, but had to be given up on the sixth day on account of absence of lacteal secretion. The puerperium was perfectly afebrile and smooth. In the fifth week her menses reappeared, and, as they were profuse and persisted for a longer period than usual, she was put to bed and given ergot. After the cessation of the flow the uterus was found to be considerably enlarged. Hence uterine massage was employed for the following two or three weeks, applying six *séances* in all. On September 19th the uterus bimanually was found to be smaller than the normal and with the sound gave a measurement of 6 cm.

Whether or not puerperal hyper-involution apart from lactation frequently occurs must be left to future investigation. To its non-occurrence, in my opinion, may be attributed many of the gynecological cases one sees in private practice. The history which everyone will readily recognize is usually as follows: The patient has had a normal labor and normal puerperium. At the second, third, or fourth week, the custom varying in accordance with the social standing of the parturient, the attendant physician has dismissed himself, saying that everything was all right. The woman says that she felt well for some months after labor, but that for the past few months she began to suffer from leucorrhœa, a sense of weight in the lower part of the abdomen, and with growing tired on the least exertion. There may be and there usually is backache and more or less of a dull pain extending down both thighs. On examination one finds redundant vaginal walls, a large uterus of flabby consistency, some leucorrhœal discharge, and abnormal mobility of the uterus owing to a lax condition of the pelvic tissues. The striking feature of these cases is the gradual onset; the patient can scarcely tell just when she began to have symptoms. This picture is most frequently met with among the better classes in whom lactation is the exception rather than the rule.

It is my firm conviction that this condition is the outcome of imperfect involution and could readily be avoided, if the attendant physician kept his patient under observation for at least three months after the puerperium. It is my custom at my last visit to request the parturient to present herself at my office for examination once a week or once every two weeks until at least the twelfth puerperal week. By observing this

rule I have frequently been able to avert, by timely recognition, the ill consequences accompanying deficient involution.

It naturally follows that there is not anything to be said on the treatment of lactation-atrophy. A word or two, however, will not be amiss. The nursing-woman should be kept under constant surveillance; an effort should be made to keep up good nutrition; the period of lactation should not be allowed to be prolonged beyond a reasonable period. A watch should be kept that the normal hyper-involution does not become permanent from whatever cause it may.

To summarize: 1. Modern researches tend to prove that post-puerperal involution consists chiefly in a retraction and contraction of the individual muscle-fibres whereby the whole uterus is reduced in size.

2. When involution goes on to its full completion the uterus is reduced to a size smaller than that of the non-parous organ.

3. This condition of complete involution is known as post-puerperal hyper-involution. It is principally seen in nursing-women, and from this circumstance has received the cognomen of *lactation-atrophy.*

4. The so-called lactation-atrophy is a normal and desirable condition. It is temporary in its duration; but very rarely under unfavorable circumstances may become permanent.

5. When the parturient is unable to perform the function of lactation it is the duty of the physician to endeavor to bring about hyper-involution by other means at his disposal. An observance of this course will prevent many a woman from developing a host of gynecological affections which frequently result from imperfect involution.

LITERATURE

Müller, P.: Bemerkungen über physiologische und pathologische Involutionen des puerperalen uterus. Festschrift für Albert v. Kölliker. Leipzig, 1887, p. 205

Thorn, W.: Beiträge zur Lehre von der atrophia uteri. Zeitschr. f. Geburtsh. u. Gyn., Bd. xvi. p. 57.

Ibid.: Zur Laktationsatrophie des uterus. Centralbl. für Gyn., 1894, No. 30, p. 716.

Kleinwächter, L.: Einige worte über die atrophie des uterus und der ovarien. Zeitschr. für Geburtsh. u. Gyn., Bd. xvii. p. 43.

Hansen, Th. B.: Ueber die puerperale Verkleinerung des uterus. Zeitschr. f. Geburtsh. u. Gyn., Bd. xiii. p. 16.

Frommel, R.: Ueber puerperale atrophie des uterus. Zeitschr. f. Geburtsh. u. Gyn., Bd. viii. p. 305.

Engström, Otto: Zur Kentniss der puerperalen Hyperinvolution der Gebärmutter. Festschrift zur Feier des fünfzigjährigen Jubiläums der Gesell. für Geburtsh. und Gyn. in Berlin. Seperatabdruck. A Holder, Wien, 1894.

Gottschalk, S.: Beiträge zur Lehre von der atrophia uteri. Samm-klin. vorträge. Leipzig, 1892, neur Folge, No. 49.

Sänger, M.: Die Rückbildung der muscularis des puerperalen uterus Beiträge zur pathologischen anatomie und klinische medicin. Festschrift für Ernst l eberecht Wagner. Leipzig, 1887.

——— The Involution of the Muscular Tissue of the Puerperal Uterus. Annals of Gynecology, 1888-89.

Dittrich, Paul: Ueber das verhalten der musculatur der puerperalen uterus unter pathologischen verhältnissen. Zeitschr. für heilkunde, 1889, Bd x. p. 15.

SCLERITIS.

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In this brief paper I have no intention to discuss the whole subject of inflammation of the sclerotic coat, but only to point out a few peculiar circumstances connected therewith from a strictly clinical point of view.

Scleritis is not a common disease, though probably among our highly rheumatic population in Scotland its occurrence is not so infrequent as it is in other places. And one would not expect that it should be common, for there is, I think, no tissue of the whole body whose function is, so far as we know, more purely mechanical and passive. Even a tendon has an active life compared with the sclerotic coat, whose sole duty it is to keep its shape, to maintain by its inherent rigidity the form and bulk of the globe. If it be true that the more active a tissue is, and the more the degree of its vascularity varies from time to time, the more apt is it to inflame, we can easily understand that the sclerotic is not a readily "inflammable" structure. It might be pointed out that the cornea, which is simply a non-vascular and transparent continuation of the sclerotic, and which has similar functions, is particularly liable to attacks of inflammation; but there are special circumstances in the case of the cornea, especially in regard to its nutrient supply, into which I must not now enter.

The persons liable to be affected with scleritis belong to two classes: (1) women either at the beginning or the close of their menstrual history, just on which occasions there is frequently a certain amount of irregularity of function; and (2) persons, whether men or women, who are of rheumatic family. I say "persons of rheumatic family" rather than "rheumatic persons," because, so far as my experience goes, I have found scleritis not so much among those who actually themselves suffer from declared rheumatism, as among those whose parents or other near relatives have so suffered. (Other causes, though decidedly less frequent, are gout and syphilis.) These two facts of liability—the menstrual and the rheumatic diathesis—seem to me to point in the direction of a chemical irritant cause, and so too do certain other facts in connection with scleritis, as we shall see.

Two portions of the sclerotic are liable to inflammation, and under ordinary circumstances two only, viz., that part close by the optic disk at or near the posterior pole, and the ciliary region anteriorly. Inflammation of the sclerotic in the first mentioned of these regions is really secondary to the involvement of the choroid in myopia, and has, as a matter of fact, little in common with the anterior scleritis of the ciliary

district, therefore I dismiss it for the meantime. Turning our attention rather to the second variety, we can readily understand that at the ciliary region, where the coat is thinnest and most vascular, it should be particularly liable to inflame. Of this area two parts appear to be specially open to attack: these are (1) the part lying in a roughly triangular area bounded above and below by the margin of the upper and lower lids and internally by the outer limit of the cornea, this being the region most freely and most constantly exposed to the influences of air, cold, wind, dust, and sunshine; and (2) a portion at the upper limit of the vertical meridian of the cornea, the region which is most protected of all from these influences, which is never exposed to air, sunshine, wind, cold, or dust, which is never without the protection of the upper eyelid for a moment. These facts being so, for these two regions are by far the most frequently attacked, we cannot escape the conclusion that there must be some cause quite apart from climatic or exposure reasons for this vulnerability. I am inclined to look for this special determining cause in the vascular arrangement of the corneo-sclerotic junction, in the case of the upper district, and allow the climatic cause considerable weight in the case of the outer district. What seems to me almost to point to a vascular cause is the fact that when an interstitial keratitis becomes vascularized, it almost invariably does so from this upper area. The usual course of events in such cases is that vessels become massed together in the corneo-scleral junction at the summit of the corneal circle and slowly make their way into the substance of the cornea from above downward. After this has gone on for some time a similar process begins below, at the inferior limit of the vertical meridian of the cornea. The same is true of the very similar disease known as vascular keratitis, to which indeed some (mistakenly, as I think) deny a separate and individual existence. An analogous state of affairs is to be observed also in the development of that curious quasi-senile change in the cornea, the arcus senilis, which is first shown above, then begins to be manifest below, and slowly makes its way round the cornea from these two starting-points. I can recollect seeing only a very few cases of an arcus *commencing* laterally; I do not recall an instance of a well-marked salmon-patch in interstitial or vascular keratitis which developed in the lateral portions of the cornea before it had shown itself either above or below; and only a few instances where the salmon-patch was present at the lower before showing itself at the upper limit of the cornea. The precise explanation of these facts I do not pretend to be in a position to indicate, but that there is some reason, and that reason is probably connected with vascular supply and return, I cannot doubt.

The contrast in respect of this matter to the areas of liability of the light-transmitting and light-receiving media is very marked. Thus the first striæ of a cortical cataract are in a large majority of cases to be seen

in the lower half-lens, and if one wishes to discover the patches of disseminated choroiditis, let him search the lower half of the choroid. The same is not true of the retina, for its diseases are mostly systemic in origin and general in distribution; nor is it true to the same extent in respect of the cornea, though even for it the statement is *partially* correct, for its nutrition is on a wholly different plan. The diseases of these "visual" regions are largely "light determined," and therefore the most illuminated area, the lower part, is most apt to suffer.

In respect, too, of its mode of onset and behavior scleritis presents certain special features. In the first place, I have never observed that exposure to cold was capable of causing it originally, though fresh attacks in a person who has once had it may probably be lighted up in this way; in this respect scleritis differs from many external and internal diseases of the eye (and other parts), even those which are distinctly systemic in origin. Scleritis, too, is unquestionably periodic in its recurrence; the intervals may not be very uniform in duration, it is true, but the waves of attack and relaxation are distinctly delineated. This is not more true, so far as I can judge, in women than it is in the male patients. A still more curious fact in regard to recurrence is that when a fresh attack occurs it takes place not in the part which was formerly affected, but in the nearest lying portion of sclerotic, so that if there are many recurrences the disease works its way right around the corneal circle to its starting-point again. In some skin diseases we see somewhat similar behavior, though not exactly the same; nothing precisely similar is found in any other part of the body.

Yet another peculiarity is that having occurred, recurred again and again, and having perhaps "circumnavigated" the cornea, scleritis ceases, and in a large proportion of cases never again troubles the patient.

In another particular scleritis resembles some other rheumatic affections of the eye, and as surely differs absolutely from certain others, viz., that it very often remains absolutely limited to one eye. That eye may be attacked again and again, may be irretrievably damaged by the repeated onsets, and yet the other remain perfectly sound, perfectly unaffected all the patient's life. On the other hand, we sometimes see the contrary condition, and both eyes attacked either at the same time or after an interval. I think it may be taken as a rule that the milder cases are limited to one eye even though they recur again and again, but the severer cases, those more properly described as sclero-cyclitis, attack both eyes, even though there may be very few recrudescences. To this rule, however, exceptions are not rare.

The superficial varieties of scleritis are of slight importance, speaking comparatively; but when the inflammation proceeds deeper and involves the entire thickness of the coat, and still more when underlying structures are involved, the results may be extremely serious. In the cases in which

the inflammatory changes are limited to the sclerotic the chief dangers are opacity of the cornea and ciliary staphyloma, and a minor evil is the occurrence of myopia. The resulting opacity of the cornea may be present centrally—from interference at the ciliary circle with the proper nutrition of the cornea, I presume—or peripherally, in which case it assumes the character of a sclerotizing keratitis. This name is very ill-applied, but the result of the change is that the peripheral portions of the cornea become altered into a white opaque tissue, quite unlike normal cornea. But neither does this altered corneal tissue accurately resemble normal sclerotic, for it is whiter, more like glazed porcelain, more "dead" looking than the sclera. The occurrence of this sclerotizing change imparts a curious eaten-into appearance to the corneal margin, very characteristic of the course of events. Naturally, since scleritis itself affects these regions chiefly, this alteration in the cornea is most to be found at the upper and outer portions of the cornea, though it is often to be seen all the way round, because in the case in which this is produced the whole circumference of the sclerotic has usually been attacked by inflammation. The other danger, viz., ciliary staphyloma, is to be feared in those cases in which the inflammatory change in the sclerotic is followed by atrophy of its tissue. In many cases after the redness has passed off the bluish-violet color of the ciliary body may be seen shining through the thinned sclera, but where this change is exaggerated and the weakest coats yield to the internal pressure—which is itself perhaps unduly increased—then there is formed a slight bulging just outside the margin of the cornea. Gradually this increases until in bad cases there comes to be formed at the upper part of the circumference or all round the cornea, it may be, a large blue staphyloma veined with white lines, the remains of the sclerotic fibres, resembling—according to the older authors, who saw poetic resemblance in many things—a bunch of grapes.

But when the inflammation passes more deeply and involves the outer coats of the eye we have a train of events most disastrous in their results. The first tissue to suffer is, as a matter of course, the ciliary body itself. The consequence of this is grave interference with the nutrition of the two immensely important structures, the vitreous humor and the crystalline lens. This follows of necessity, for, as has been shown by Collins and others, the ciliary body is partly composed of an infinite number of glands whose function is to preside over the nutrition of these transparent media; dimness and haziness of the aqueous humor, then cloudiness and intransparency of the vitreous humor more or less dense and more or less widespread, and gradually increasing cataract of an unhealthy type, are the direct sequelæ of degeneration of the ciliary body. At the same time the tension of the globe, often increased at first, tends to become lowered, and the retina to become detached from the choroid. The ciliary

body being continuous with the choroid coat behind and with the iris in front, inflammatory changes are very apt to spread to these structures, and we have next brought about the further evils produced by choroiditis of a sluggish and degenerative character. Iritis shows itself in the "bound-down" pupil, in the lymph exuded into the pupillary area of the anterior lens capsule, in the iris bombé, and in the surely degenerative vision.

The consequences of a bad case of deep scleritis are thus seen to manifest themselves in the disease and degeneration of every "vital" part and organ contained within the globe.

In respect also of the treatment appropriate to the condition, scleritis presents a peculiarity, for, speaking generally, the less local treatment is employed the better. Personally, I seldom enjoin any local application beyond bathing with a warm or lukewarm bland lotion. In more sluggish cases massage with a mild mercurial ointment seems to do good, but should be used with caution. Atropin is only useful where complication exists in the way of inflammation of iris or ciliary body, and, in view of the possibility of the tension rising and the weakened coats yielding, the effect of the atropin also must be anxiously watched, and a myotic substituted if necessary. Some have obtained benefit from subconjunctival injection of mercurial lotions, and even of water; I have, in a few cases in which the vascular injection and the swelling were persistent and severe, obtained good from the operation of periotomy either locally or all round the cornea. But it is really on internal medication that reliance has to be placed, local treatment being quite secondary in importance and value except perhaps as applied to the complication. It is not necessary in this article to mention all the remedies which are employed, and to do so would take me outside the intended lines of this article, but I should like to direct attention to a mode of treatment which has not obtained the place in the estimation of the profession to which I think it is entitled, viz., subcutaneous injection of pilocarpin. The method of carrying this out which I prefer is to let the patient have a walk in the fresh air in the morning; dine lightly on fish or chicken with vegetables, but no meat, about one o'clock; to retire to bed, lying in flannel, at about 4 P.M., which time I administer an injection into the arm of about one-tenth to one-sixth of a grain, according to what I find the patient can well stand. The patient remains in bed for three to four hours, perspiring, and then cooling down, during which time a cup of tea is allowed; then the patient is permitted to get up, takes a slight warm bath, changes the clothes entirely, and may stay up in a warm room for a few hours; he takes a light milk supper, and according to circumstances sleeps in a different bed, or at all events in thoroughly dry bedding. I do not claim in the least to have myself discovered the virtues of pilocarpin in such cases—it is mentioned in Landolt and de

Wecker's *Traité d'Ophthalmologie*, and elsewhere—but I do think it is deserving of more attention than it receives at present in the treatment of obstinate cases of scleritis.

THE CAUSES OF THE LOCALIZATION OF GUMMATA.

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Among the many problems which are encountered in theoretical medicine few are of more interest than those dealing with the question, "Why in any general disease is a special part of the body affected?" and in this paper I shall endeavor to answer, in part at least, this question as applied to gummata; that is to say, "Why do gummata, the local manifestations of a general condition, occur in the body in those positions in which they are found rather than elsewhere?"

And first, as to the etiology of gummata. There can be no doubt that the primary lesion in syphilis is the effect of the local action of the specific organism at the point of inoculation, and that the secondary manifestations are similarly the effects of the organism and its chemical products on the body generally after the microbe has entered the blood-stream; the contagiousness of the primary and secondary lesions is sufficient proof of this proposition. But when we proceed to the tertiary lesions, we are justified in considering that the existence of the organism in the body at the time of their appearance is not necessary, as when they appear usually the case is no longer infective, that is to say, the organism is dead. Occasionally tertiary lesions have appeared to be infective, but these cases are probably to be explained by the coexistence of secondary eruptions; so that we may, I think, accept it as fairly certain that tertiary manifestations may exist without the organism. Before its death the organism has formed a large quantity of chemical substances, "toxins," which it leaves behind, and the production of which probably hastens its death. These products which are doubtlessly chemical in nature, and probably organic, though not organized, have the power under certain circumstances, of acting as an irritant of a special kind on some of the tissues, and so giving rise to a gumma. The structure of a gumma shows that, though different in many respects from ordinary inflammatory tissue, it is still merely a product of inflammation. In the centre we find (before caseation has set in) giant cells, surrounded by masses of small "lymphoid" cells. The irritant is not a mere mechanical irritant, but a special chemical substance, and that fact naturally suffices to distinguish its product from those of other irritants

of a more simple nature. A giant cell, at least in most cases, may be looked upon as the result of an irritant acting on a normal cell, the irritant being not sufficiently powerful to cause the cell-substance to divide, but intense enough to cause the nucleus to multiply. The giant cells of a gumma, then, are probably derived from exudation corpuscles, which have become giant cells by the action of the irritating toxins of the syphilitic germ.

It is often stated that the tertiary manifestations of syphilis are due merely to a general chronic inflammatory condition of the whole body, caused by the action of the syphilitic virus, but the cause having been removed, the inflammation would tend to subside rapidly and would certainly not persist for years, sometimes for ten, twenty, or even for thirty years, as we find it does.

We may, I think, accept the theory that a gumma is the result of a special irritant acting on the tissues, and we now have to determine why a gumma appears in one place and not in another.

The first proposition I would lay down would be that "gummata tend to appear in structures poorly supplied with blood." Thus, let us consider the case of the tongue; the least vascular part of the tongue is the median vertical septum; this is well shown by the fact that if the tongue be divided with the scissors in the middle line, as is done in excision of half of the tongue, practically no hemorrhage occurs. This is the part of the tongue where we most frequently meet with gummata; in fact, they are very rare in any other part of the organ. But though the whole median lingual septum is nearly vascular, yet there is one part of it which is especially free from vessels, namely, a line, parallel to the dorsum of the tongue and about one-quarter of an inch below it; and this is decidedly the most frequent situation for gummata of the whole tongue. And we find the fact to be the same for other organs; when a gumma is deposited in muscular parts of the body, it is nearly always situated not in the muscular substance itself, but in intermuscular septa or in the sheaths of the muscles.

In bone also (putting aside the cases in which the formation of a gumma follows an injury, which I will consider later) gummata rarely occur in cancellous tissue, but are not uncommon in compact bone, as in the cranial bones. In the liver gummata rarely occur if the liver be otherwise healthy, but they are very prone to occur in cases in which the liver has previously been the seat of a general syphilitic sclerosis. When the laryngeal cartilages are affected the gummata are deposited in the fibrous perichondrium. When joints are involved the gummatous deposit affects the capsule. These incidents are sufficient to show the tendency that the gumma has to affect avascular parts of the body, and it is equally evident that it does not attack parts that are remarkable for a large amount of blood-supply. Thus, gummata of the lungs are very

rare, but they may occur if there has been a previous chronic fibrous or fibroid pneumonia. The spleen, pancreas, and kidney are rarely affected with gummata, and all are very vascular organs. This tendency of gummata to appear in avascular tissues shows a marked contrast to what is met with in the case of tubercle, for tuberculous masses, though histologically extremely like gummata, are only deposited in vascular tissues; this is seen in the frequency with which the lungs are affected with tubercle.

The second proposition I advance is that "impairment of the nutrition of any tissue is a great incentive to the deposition of gummatous material in it." The impairment may be the result of either of two classes of causes, namely, of injury or of interference with the circulation.

That local injury predisposes to the formation of a gumma accounts for the frequency with which we meet with the statement that a blow or some such injury has preceded the appearance of a swelling, which proves to be a gumma. The following is a fairly typical example:

A woman, aged forty-five years, received a blow on the left leg, immediately above the internal malleolus; about a month later she applied at the hospital on account of a very definite swelling on the tibia where the blow had been inflicted; it was about three inches long, and at its greatest elevation it was raised about one-half inch above the general level of the bone; its edges were well defined. Though a little doubt was felt as to its nature, yet, as a slight syphilitic history was obtainable, the case was treated by the internal administration of potassium iodide, and the swelling rapidly disappeared.

The frequency with which syphilitic nodes appear on the crest of the tibia is sufficient evidence in itself that local injury is a powerful exciting cause for the appearance of a gumma.

Sometimes the injury has been so slight that at first reasonable doubt may be felt whether it has been sufficiently severe, but I think enough cases could be quoted to show that the injury, slight though it be, has been the localizing cause. In many cases an injury, though slight, if often repeated, will suffice to cause the appearance of a gumma; such are the cases in which gummata appear in the skin over the knee; this position is much more common in women than in men, and even in women it is practically confined to those who have much kneeling to do, as in floor-scrubbing. Again, excessive use of a joint, or even an amount of use which can hardly be called excessive, will suffice to localize a gumma; thus a by no means rare situation for a gummatous deposit is the sterno-clavicular articulation; I am not aware of any post-mortem examination having been performed on such a case, so we cannot be certain in what structure of the joint the deposit occurs, but in all probability the capsule is the part affected. Now, in these cases the right sterno-clavicular joint is the one which is almost always attacked, the

joint on the left side being affected very much more rarely, the obvious explanation is that as most people are right-handed the right sterno-clavicular joint is much more used than the left. In one case in which the joint on the left side was affected, the patient, a woman, volunteered the information that in her work she had to use the left arm much more forcibly than the right. Speaking generally, we may say that, whenever gummata are met with in connection with a joint, evidence can be obtained that the joint in question has been used more energetically or more frequently than other joints.

I have mentioned already that impairment of the nutrition of a part may be due to interference with the circulation, as well as to injury. A very good example of this is to be found in the frequency of the occurrence of gummatous ulcers on legs in which the veins are varicose. In these cases at first sight there may seem to be an excess of blood, but the stagnant blood of the passive congestion caused by varicose veins is of little avail for purposes of nutrition; in fact, the nutrition of the part is much impaired and gummata are readily deposited, especially where the congestion is greatest—that is, in the lower part of the leg. Many ulcers appearing in this situation and being accompanied by varicose veins are often diagnosed as ' varicose ulcers," and resist long-continued treatment, but yield readily if antisyphilitic treatment be combined with the treatment directed against the varicose condition.

I may briefly recapitulate the propositions I advance as to the causes of the localization of gummata:

1. That a small blood-supply is necessary for a part to become the seat of a gummatous deposit.

2. That anything which impairs the vitality of a part will predispose that part to invasion of a gumma; and that mechanical injury, excessive use, and interference with the circulation are the chief ways in which this impairment of vitality is brought about.

REVIEWS.

THE PATHOLOGY AND TREATMENT OF VENEREAL DISEASES. By ROBERT W. TAYLOR, M.D. With 230 illustrations and 7 colored plates. New York and Philadelphia: Lea Bros. & Co., 1895.

THIS book is decidedly the most important authoritative treatise on venereal diseases that has in recent years appeared in the English language. It represents not only the beliefs and teachings of its distinguished author, but it has embodied in the text the result of the studies and conclusions "of all observers whose work shows inherent evidence of truth and progress." It is particularly noteworthy for the attention which has been devoted to pathology in relation to its practical applications.

After a brief but very clear description of the anatomy and physiology of the penis, the urethra, the bladder, the prostate and accessory parts, the study of the gonococcus is taken up. As a conclusion the author states:

"The consensus of opinion of the most eminent investigators of this subject is that from cultures alone can we get absolutely correct knowledge of the character and identity of micro-organisms. In this way the gonococcus can be demonstrated without any trouble, and confirmation of its existence may be obtained (if a consenting case can be found) in experimental inoculations on the male or female urethra. It must be borne in mind that the mucous membranes of most animals are immune to the virulent actions of the gonococcus, but the urethra of the dog can be infected with cultures made in an acid medium."

Considering the etiology of gonorrhœa, Taylor draws the following conclusions:

"1. In a large proportion—perhaps in a large majority—of cases of acute purulent gonorrhœa or urethritis the pathogenic agent is the gonococcus. (Bumm, it will be remembered (*vide supra*), claims that in every case it is found.)

"2. In a small proportion of cases of acute purulent gonorrhœa or urethritis the infecting agent or agents seem to be, in the absence of the gonococcus, one or more of the pyogenic microbes, the staphylococcus and the streptococcus, and perhaps others whose virulency is not yet demonstrated. (Bumm claims that secretions free from gonococci are non-infectious.)

"3. In many cases of mild urethritis in virgin subjects, and in those who had no true gonorrhœa some time before, these micro-organisms and others more or less well known to us are in all probability the causes of urethral suppuration, the tissues being rendered by coitus favorable to their pathogenic action.

"4. Some cases of mild or more severe relapsing gonorrhœa, with

abundant purulent secretion, may be due to the renewed activity of gonococci, which may have remained latent and dormant in the urethra, but which, under favoring circumstances, had again taken on their virulent action. In some of these cases the symptoms are much less severe than in the first attack. The inference, then, is that the tissues are less susceptible or that the virulence of the gonococcus has become attenuated.

"5. Many cases of more or less severe relapse after true gonorrhœa are not due to the gonococcus, but to other less virulent microbes. Then, again, the hyperæmia left after an attack of gonorrhœa may increase to an active purulent inflammation as a result of stimulation or sexual excesses, microbic action being entirely absent. This is probably the condition in most cases of acute or mild urethritis in which neither gonococci nor other micro-organisms are to be found.

"6. It is clearly proved by clinical observation and experimental inoculation that pus or any secretion (*e. g.*, the lochia) containing gonococci may, and does, produce a virulent suppuration in susceptible mucous membranes, most commonly of the urethra and of the eyes.

"7. The observations of Lustgarten and Mannaberg, of Steinschneider and Galewsky, and of others already mentioned, go to show that pathogenic and non-pathogenic micro-organisms are found as inoffensive inhabitants of the normal urethra. There is sufficient evidence in our possession to-day to warrant the belief that under the favoring conditions of sexual excitement and excess these micro-organisms become hostile and virulent and give rise to urethral suppurations of both mild and severe types.

"8. The statement is further warranted that these saprophytic agents may cause a purulent inflammation in a urethra congested, ulcerated, or infiltrated as a result of a previous gonococcus inflammation. There is no doubt whatever that many cases of relapse of gonorrhœa are not caused by a renewed gonococcus-infection nor by the relighting into activity of latent hibernating gonococci, but that they are due to the morbid action of the less virulent microbes, denizens of both healthy and damaged urethræ.

"9. The advocates of the gonococcus theory go too far when they claim that this micro-organism so frequently remains dormant and hiding in the urethra after the cessation of a true gonorrhœa. The gonococcus is essentially a virulent agent and a disturber of the peace, and for reasons and from facts to be given later it is fair to assume that it disappears from the urethra upon the final cure of true gonorrhœa. It is the exception, rather than the rule, that it should remain dormant in the urethra for a long time.

"10. Most of the cases of gonorrhœa or urethritis which are the result of chemical or mechanical irritation or violence are in all probability due to the morbific action of a number of micro-organisms so constantly found in normal and chronically and very subacutely inflamed urethræ. This statement is very clearly proved by the evidence of Legrain, De Amicis, Castex, myself, and others. In some cases these chemical and mechanical irritants provoke an exacerbation of the virulence of the gonococcus. In these cases, however, it is probable that the virulent urethritis is not yet at an end, or that the gonococcus had not yet thoroughly disappeared.

"11. The studies of Eraud, Hugounenq, and D'Arlhac are worthy

of thought and investigation, since they put the gonococcus question in a new light. They think that this micro-organism is a denizen of the normal and diseased urethra, and that under favorable conditions it takes on virulent action. It will be seen a little further on that it is frequently very difficult, and in many cases impossible, to find gonococci in the secretions of a woman with whom a man suffering from true gonorrhœa has had coitus. Many cases seem to prove that the infection of the man (he even having a healthy urethra) is due to causes inherent in himself. Neisser and his followers in a magisterial manner claim that gonococcus-infection in the male urethra in a virgin subject always is derived from a secretion of the female consort containing gonococci. We shall see, later on, that this view is at variance in many cases with clinical facts, and that Eraud's proposition may in the end lead to a partial or full explanation of the subject. There are, however, very many cases (as we have seen) of gonorrhœa which were derived from a similar process in the female.

"12. The term 'pseudo-gonococci' does not apply to any particular micro-organism, but it is being applied rather loosely to any and all microbes capable of producing urethral suppuration."

In the treatment of acute urethritis or gonorrhœa it is worthy of remark that decided preference is given to a very admirably devised conservative plan in accordance with which injections are not begun until the extreme severity of the acute stage is moderating. Detailed observations of irrigations, retrojections, and endoscopic applications as abortive measures receive due consideration.

It is interesting to note that in chronic urethritis preference is expressed for the bougie a boule as an exploring instrument.

The complications of gonorrhœa are very fully considered, and chapters are devoted to Gonorrhœa in the Female, Gonorrhœa in Boys, and Gonorrhœa and Vulvo-vaginitis in Infants and Young Children. Under Stricture of the Urethra it is gratifying to learn that Taylor lends the weight of his authority to a thoroughly conservative treatment; *i. e*, intermittent dilatation, advocating the use of the knife at least in deep strictures or ly when the safer and more gentle treatment is obviously inappropriate.

In the treatment of varicocele the operation of excision is evidently the one of choice. As a cure for hydrocele Taylor prefers incision, rejecting injection as only applicable to cases of rather recent hydrocele and of not excessive size, in which the epididymis and testes are healthy.

After a most logical discussion of the nature of chancroid, Taylor concludes as follows:

"What we call chancroid is the product of many varieties of pus derived from non-syphilitic and syphilitic subjects. It is, therefore, a hybrid, heterogeneous lesion, in all cases a septic ulcer, and in many instances simply an active form of wound-infection. This septic ulcer in some cases originates *de novo* from the contact of pyogenic microbes with a raw surface, herpetic or eczematous excoriation, a chafe, etc., sexual contact, local infective process, is more active in syphilitic than in non-syphilitic subjects. It follows, therefore, that so long as pyogenic microbes and tissue-predisposition exist chancroids will be found upon the mucous membranes and integument of the human race."

Under Treatment the following golden rules are given:

"In the treatment of chancroid it is important to know what not to

do, namely, not to give mercury and treat the case as one of syphilis, which is the custom of many practitioners; not to employ the curette as an abortive or curative means in the very early stage of the ulceration; not to cauterize injudiciously and indiscriminately; not to use ointments and fatty preparations; and never resort to excision. Nothing but harm can follow any of these procedures."

The section upon Syphilis is truly admirable and occupies nearly half the book. It is probably the most scholarly, able, and practical treatise on the subject to be found in any language. In discussing the general methodical treatment of syphilis the following opinions are well worthy of quotation:

"I have carefully studied this question for more than twenty-five years, and I am now more than ever convinced that it is by far the best plan in most cases to wait until the onset of the secondary stage before we begin a mercurial course. In thus waiting it must be remembered that we are not to fold our arms and do nothing; we must regularly examine our patient; we must look after his general well-being, mental and physical, encourage him with hopeful prospects, and prepare him for his coming ordeal, the crucial one perhaps of his life. Then, just as soon as general symptoms and manifestations begin to appear, and we know that we are right and appreciate fully what we have got to treat, then we must begin our mercurial treatment with vigor, tempered by watchful care of our patient, and an enlightened and conservative knowledge of therapeutics.

"The treatment of syphilis means on the part of the physician a full knowledge of the disease, a consideration of the patient's strength or weakness, a close familiarity with the lesions and with the workings of the syphilitic virus in his system, and an accurate knowledge, based upon frequent observation and interrogation, of the manner in which the remedial agent affects his system and the general morbid condition. In other words, the physician has not the abstract problem—syphilis—to treat, but he has a human being infected with a chronic multiform disease as the subject of his study, and for whose relief and cure he must familiarize himself with his constitution and watch and guide the effect of his therapeutic agent."

It is to be hoped for the good of suffering thousands that Taylor's book will have in the profession the circulation and the careful study which it merits. E. M.

THE PRINCIPLES AND PRACTICE OF MEDICINE. DESIGNED FOR THE USE OF PRACTITIONERS AND STUDENTS OF MEDICINE. By WILLIAM OSLER, M.D., Fellow of the Royal College of Physicians, London; Professor of Medicine in the Johns Hopkins University and Physician-in-chief to the Johns Hopkins Hospital, Baltimore, etc. Second edition. 8vo., pp. 1143. New York: D. Appleton & Co., 1896.

ALTHOUGH one of the most recent text-books, Osler's *Practice* has established itself as an authority, and the second edition calls for little in the way of general critical comment. The characteristics of thoroughness, clearness, accuracy, and frankness which mark all of the author's work are here pre-eminent, and, having lost none of their charm, are

worth pointing out once more. The work is eminently a personal one —by which we do not mean to imply that the author is unfamiliar with the writings of others, or that he fails to utilize, and utilize well, the whole field of medical literature, but that he has based his descriptions and advice most largely upon personal observation and research, and is not a mere compiler, repeating errors and wisdom, ancient or modern, indiscriminately. While at times this personal limitation leads to an inadequate presentation of the subject of treatment, it adds to the weight of all positive recommendations. The personal element is not, however, always a limitation; thus it gives to the book what are, perhaps, its greatest merits, not only in imparting information, but in stimulating thought; namely, the direct relations established between pathology and semeiology, and the broad general views, not so much expressed in citable paragraphs and sentences, as impressed upon every theme and every page.

Dr. Osler's style is direct, forcible, simple, and the work throughout exhibits a due sense of proportion. There is, moreover, a sanity of judgment as helpful as it is rare. The new edition has been thoroughly revised and contains many important additions representative of the progress of medical science in the three years that have elapsed since the publication of the first edition. Some minor omissions have, however, been noted, and a few of these will be pointed out.

The article on Typhoid Fever has been thoroughly revised to date; and one notes as its most striking features the stress which the author now lays upon hydro-therapeutic treatment according to the strict method of Brand. As Dr. Osler has been slow to accept the Brand method in all its rigorous detail, his present opinion must be taken as a conclusion forced upon him by experience, and is, therefore, the more forcible. We regret, however, that he does not seem to appreciate either the philosophy or the practical benefit of what he terms "eliminative and antiseptic treatment." We feel convinced that if he will add to the hydro-therapeutic measures (not necessarily Brand's rigorous method) adapted to the individual case and the varying conditions present at different times, the use of such drugs as calomel, turpentine, salol, guaiacol, benzonaphtol, dilute hydrochloric acid, chosen also with regard to the special conditions present at the time of their administration, the mortality of his cases will be still further lowered and the comfort of his patients considerably increased. In cases of intestinal hemorrhage the use of plumbic acetate and opium is recommended, with ice internally, but the author has nothing to say concerning enemata of ice water and the application of ice to the abdomen, both of which are highly useful. We attribute to turpentine, too, a greater usefulness than he seems willing to admit. Besides restricting the amount of food we deem it important to change the character of the diet, giving only peptones or other food that can be absorbed directly from the stomach or upper intestine. In cases of perforation with peritonitis Osler is willing to "discuss the question" of cœliotomy. This is a judicious position. The article on Malarial Fever has been in large part rewritten and is probably the most complete epitome of the subject to be found in literature. We are glad to see that Dr. Osler recognizes the utility of quinine-and-urea hydrochlorate, for the more extended use of which we have long been contending. The section upon Diphtheria has been entirely recast and extended from eleven to twenty pages. We note with pleasure the adoption of

the term "diphtheroid" to characterize those forms of membranous sore-throat in which the Klebs-Loeffler bacillus is not present, as well as the recognition of the fact that the presence of this microbe is not necessarily an indication that the person in whose throat it has been found is affected with diphtheria. The description of the diphtheroid throats, however, is quite imperfect and might have been bettered by reference to monographs or special text-books by American authors readily available. Dr. Osler recognizes the existence of a membranous laryngitis which is not diphtheria—a point which illustrates how in the revolutions of professional opinion the testimony of experienced clinicians is not to be lightly set aside because of imperfect pathological studies. The advanced pathology justifies, at last, those physicians who, in opposition to pathological authorities, contended that they did meet at the bedside with cases of membranous croup which were not of diphtheric origin. It is true that these cases are rare and that the discrimination is often difficult, and, in consequnce, proper precaution against the spread of infection should be taken in every case, no matter what the diagnosis may be. Without deciding finally, Osler expresses himself favorably toward treatment by antitoxin.

The articles on Septicæmia and Pyæmia have been rearranged and largely rewritten. In connection with the articles on Cholera, Syphilis, Tuberculosis, and other of the infectious diseases, much new matter has been added. Enteroclysis and hypodermoclysis are advised in the treatment of cholera, their usefulness having been established in the recent epidemics. More stress should be laid upon the application of external heat, and a few additional lines as to the methods of making such applications would not be superfluous. Dr. Osler is in favor of placing tuberculosis on the list of diseases of which notice must be given to authorities. He believes that the hardships entailed on individuals would be trifling in comparison with the public good that would follow systematic measures of inspection and disinfection.

While the author recognizes the fact that natural or spontaneous healing is frequent in tuberculosis, and that the first and most important measure in treatment is to place the patient in surroundings most favorable to the maintenance of maximum nutrition, and while for this purpose he properly emphasizes the value of fresh air, we regret, on the other hand, his imperfect estimate of the utility of altitude in climatic treatment and his very casual mention of pneumatic therapy in general. We have no hesitation in reaffirming here our opinion that any physician who at this period in the history of medicine neglects to give his phthisical patients the benefit to be derived from the persistent and intelligent use of air at modified pressures is extremely derelict.

Rheumatic fever is described as depending upon an unknown infective agent. We are inclined to believe that this statement might have been extended either by saying that there are many affections now wrongly included under the head of rheumatism which will hereafter be separated, or by saying that many unknown infective agents are causative of rheumatism. Arthritis deformans is still attributed to neurotrophic causes, an opinion which may, perhaps, have to be modified in a later edition. The causation is probably complex, infection and nervous influences both taking part in it; while there seems to be good reason for including impairment or perversion of thyroid function as an etiological factor in some instances. The sections on Gout and Diabetes have been

considerably extended. Concerning the causation of gout we can all agree with Osler's statement that "the precise nature of the disturbance in metabolism is not known. There is, probably, defective oxidation of food-stuffs combined with imperfect elimination of waste-products." Of diabetes mellitus it is also frankly stated that "we are ignorant of the nature of the disease;" while reference is made, of course, to the various theories held by writers. As to the treatment of this group of affections, we are glad to notice that Dr. Osler believes it is better to allow the diabetic patient a few ounces of ordinary bread daily than to torture him with gluten bread and other unsatisfactory and often fraudulent substitutes. He recognizes the usefulness of levulose, but we are sorry to note the absence of reference to strontium preparations, which we believe to be truly helpful in the management of diabetics, especially the obese, the elderly, and the gouty.

Descriptions of infantile scurvy and of hemorrhagic diseases of the newborn have been added to the section on Constitutional Diseases. In the treatment of hæmophilia, calcium chloride, probably the best of all medicinal agents, is not mentioned.

In the section upon Diseases of the Digestive Organs descriptions of eczema of the tongue and of leucoplakia buccalis have been incorporated; but we miss any allusion to hairy tongue (black tongue), a condition not so rare as it was at one time supposed to be, and worthy of at least two or three lines in a modern text-book of medicine. The same may be said of herpes pharyngis and mycosis tonsillaris. In describing suppurative tonsillitis the author fails to call attention to the fact that the abscess is most frequently situated not in the gland itself, but in the connective tissue around the gland (peritonsillar abscess), and that in such cases the pus is to be reached most readily by incision through the swollen soft palate, a little to the inside of the upper angle of the gland. The use of guaiacol locally, probably the most effective measure now at our command in tonsillar inflammations, is not mentioned. In connection with the subject of adenoid vegetations at the vault of the pharynx we note with pleasure the allusion to Catlin's entertaining booklet.

The methods of clinical examination of the stomach have been omitted from the present edition of Osler's *Practice*, since they more correctly belong to the manuals of diagnosis; but the omission is more than compensated by additions to the chapters dealing with Appendicitis and Diseases of the Liver.

In relation to recovery without surgical interference in cases of appendicitis, Osler does not agree with those surgeons who assert that all such patients are liable to recurrence with grave accidents. He has known personally numbers of such cases in which after one or even two attacks the individuals have remained in perfect health. He calls attention, likewise, to the appendicular hypochondriasis which has been caused "through the pernicious influence of the daily press," and, he might have added, of those surgeons who are careful to have their operations accidentally reported in the daily press. The use of saline purges early in the attack, which is advocated by some surgeons, is, according to the author, a most injurious practice; on the other hand, he believes that opium could be given less frequently and that medicinal treatment should largely consist of regulation of the diet, rest, the application of ice externally, and a judicious expectancy ready to call the surgeon to operate, if by the third day the features of the case point to a progressive lesion.

The section upon Diseases of the Blood and Ductless Glands has been largely rewritten, retaining, however, its characteristics of clearness and fulness. Allusion is made, in connection with Addison's disease, exophthalmic goitre, and myxœdema, to the new methods of organotherapy. The author seems to give a qualified assent to the doctrine of the thyroidean origin of Graves's disease and its treatment by thyroidectomy—erroneously, we believe.

A new introduction has been written to the subject of Diseases of the Nervous System and useful diagrams added. Most of the important advances which have been made in the pathology and diagnosis of nervous diseases have been incorporated in the appropriate places. Paralysis agitans is regarded as a premature senility of certain regions of the cerebral cortex, and the microbic or infective origin of chorea, while alluded to with some degree of favor, does not seem to be accepted.

Changes and additions, besides those specially noted, are a new section on Affections of the Mesentery, a description of the dislocations and deformities of the liver, a brief account of anuria, and of the parasitic infusoria. There is no section which has not been revised and corrected and many have been entirely rearranged. As a whole, Osler's *Practice* in its improved form is probably the best and most trustworthy guide for the English-reading student. Beyond this, moreover, it is a satisfactory and helpful reference-book for the experienced physician, setting forth as it does the advanced position of contemporary science, while avoiding all temporary "fads" or fascinating but unproved speculations. Like its author, the book may be expected to retain permanently a high place in the esteem and affection of the profession. S. S C.

A Text-book upon the Pathogenic Bacteria, for Students of Medicine and Physicians. By Joseph McFarland, M.D, Demonstrator of Pathological Histology and Lecturer on Bacteriology in the Medical Department of the University of Pennsylvania, etc. With 113 illustrations. Philadelphia: W. B. Saunders, 1896.

This volume of 359 pages presents in a systematic description accounts of all the important pathogenic bacteria, together with some of the non-pathogenic that resemble certain ones of the first class.

The substance of the volume is not new, it is only a different presentation of the facts of a great science, and this in the briefest possible way.

The book may very well serve as an introduction to the study of medical bacteriology. It is divided into the introductory portion containing a short history of the development of our knowledge upon the subject and a description of the methods of study of bacteria, and this is followed by the consideration of a number of special diseases and the bacteria related to them.

The volume is well printed, and the illustrations, which are mostly taken from other sources, are satisfactorily reproduced. H. C. E.

THE PRINCIPLES OF BACTERIOLOGY. A PRACTICAL MANUAL FOR STUDENTS AND PHYSICIANS. By A. C. ABBOTT, M D., First Assistant, Laboratory of Hygiene, University of Pennsylvania, Philadelphia. Third edition, enlarged and thoroughly revised, with 98 illustrations, of which 17 are colored. Philadelphia and New York: Lea Bros. & Co., 1895.

THIS well-known book upon bacteriology has come before the public for the third time, presenting some changes and additions which enhance its value as an aid in the laboratory. So much has been said in its favor before that there is little to add, but it may be well to emphasize the excellence of the descriptions of methods used by the author. The demand for the new edition is, of course, accounted for by the fact that the book supplies a marked need of the medical students of the country.

H. C. E.

THE JOURNAL OF EXPERIMENTAL MEDICINE. Edited by WILLIAM H. WELCH, M.D., Baltimore. Associate Editors—*For Physiology:* H. P. BOWDITCH, M.D., Boston; R. H. CHITTENDEN, Ph.D., New Haven; W. H. HOWELL, M.D., Ph.D., Baltimore. *For Pathology:* J. GEORGE ADAMI, M.D., Montreal; W. T. COUNCILMAN, M.D., Boston; T. MITCHELL PRUDDEN, M.D., New York. *For Pharmacology:* JOHN J. ABEL, M.D., Baltimore; ARTHUR R. CUSHING, M.D., Ann Arbor; H. C. WOOD, M.D., Philadelphia. *For Medicine:* R. H. FITZ, M.D., Boston; WILLIAM OSLER, M.D., F.R.C.P., Baltimore; WILLIAM PEPPER, M.D., Philadelphia. New York: D. Appleton & Co.

IT is with much pleasure that we call the attention of our readers to the first number of the *Journal of Experimental Medicine*, for we believe that its appearance marks the development of a new era in American medicine. In this country the struggle for existence has been so absorbing and the opportunity for truly scientific medical work so meagre that the energies of our medical men have been devoted for the most part to those departments of medical investigation which promised some immediate practical return, and in consequence the bulk of our medical literature has consisted of reports of clinical studies and of therapeutic suggestions. The past decade has, however, witnessed a great change. Laboratories of experimental research have rapidly sprung up all over the country as the result of a wider appreciation of their need, aided in many instances by generous endowments, and the development of the more purely scientific departments of medicine has been most rapid. The appearance of the *Journal of Experimental Medicine* is evidence that the product of these laboratories is such as to warrant the publication of a journal devoted more particularly to the presentation of the researches conducted in them.

As will have been already inferred, the immediate object of the *Journal* is to afford investigators a medium for the publication of their work in all its details and with abundant illustration. During the past few years the absence here of a suitable periodical has not infrequently led our investigators to send their papers abroad for publication in journals where they would be associated with other work of similar scope. In

consequence the credit of not a little of our best scientific work has been lost to America, and the stimulus to our investigators afforded by the presence among us of a journal devoted to the publication of the results of experimental investigations has been lost.

As indicated by its title, the scope of the new journal is somewhat limited. It is not intended that it shall be a general medical journal, presenting the advances in all departments of medical science, but simply in those dependent for their progress upon research of an experimental nature. It will consequently present for the most part the results of studies in physiology, pathology, pharmacology, and experimental medicine, each of which subjects is very ably represented upon the editorial staff.

The first number comprises 210 pages, and presents seven articles handsomely printed and well illustrated. Subsequent numbers will appear as the matter for them is accumulated, but it is intended to publish at least four such numbers yearly. The subscription price is five dollars.

In the department of Medical Progress we shall take occasion to review several of the articles contained in this first number of the *Journal of Experimental Medicine*, but in the meantime we would extend to it our greeting and best wishes for a long and successful career.

J. S. E.

A Treatise on Nervous and Mental Diseases, for Students and Practitioners of Medicine. By Landon Carter Gray, A.M., M.D. Second edition, revised and enlarged, with 172 illustrations and 3 colored plates. New York and Philadelphia: Lea Brothers & Co., 1895.

Numerous changes are noticeable in the second edition of this attractive volume, already so familiar to the profession. The anatomical portion has been largely rewritten, and in addition three beautiful colored plates illustrating localization and function have been added. That portion dealing with nervous histology has been brought up to date and embraces the latest researches of Ramón y Cajal and Andriezen. In addition five new chapters have been added, namely, on Dementia, Dementia Paranoides, Confusional Insanity, and Delirium, and one on Massage. In consequence of the amount of new matter added the author has omitted, and we think very wisely, the pages devoted in the first edition to bibliography. The glossary, so useful in a book of this kind, and also the index, have been much amplified. As in the former edition, the author spends much time upon the subject of treatment, speaking in the authoritative style so familiar to his readers. In numerous portions the consideration of treatment has been expanded. The favorable impression created by the first edition is certainly enhanced by the one before us. In addition to the colored plates already mentioned, a number of new illustrations have been added.

The publishers are also to be congratulated upon the fine appearance of the volume, as shown in the beauty of the printing and of the illustrations.

F. X. D.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.D., LL.D.,

PROFESSOR OF MEDICINE AND THERAPEUTICS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; VISITING PHYSICIAN TO ST. MARK'S HOSPITAL.

Treatment of Rebellious Headaches by Calomel.

M. Galliard often meets with individuals who complain of continued headache, which should not be confounded with migraine. It is continuous with paroxysmal exacerbations, but without vertigo, nausea, or vomiting. It is generally frontal, rarely temporal, vertical, or occipital, and does not present painful points. The sleep is not disturbed. It is more frequent in women, and is generally in relation with neurasthenia. But apart from the persistent headaches of neurasthenics are headaches which are independent of neurasthenia, whose pathogenic relations are unknown, and like them are marked by their persistency and resistance to analgesic drugs, and generally to the usual remedies. With these one and one-half grains of calomel taken in the morning for six mornings, fasting, have succeeded in some cases. The mouth should be watched for stomatitis. On the third or fourth day there are likely to be colic and diarrhœa, and rest in bed may be necessary. Breaches of diet and chilling must be guarded against. If the first series fails, after a few weeks of interval repeat; if the second fails, it is useless to insist further.—*Journal des Praticiens*, 1896, No. 9, p. 140.

The Treatment of Gonorrhœa by Bismuth Subacetate.

Dott. Bendetto Costantini reports four instances of its use, concluding that in a fine and impalpable powder placed in contact with the urethral mucous membrane it acts as a protective, diminishing and then abolishing the irritation produced by the passage of urine. Acting as an astringent and cicatrisant, it diminishes the action of local hyperæmia. Microscopic investigations show that it is an obstacle to the development of the gonococci, and it is also active against the common pyogenic germs, thus diminishing the danger of chronic urethritis. It can be used as an excellent substitute for

other astringents and antiseptics, with the further advantage of being more active and odorless. One, two, or even three(!) injections may be made each day. It appears from these observations that the remedy may be used during the entire time of treatment, and that habituation on the part of the urethra does not occur. It is of advantage to use this in conjunction with irrigations of sterilized water.—*La Riforma Medica*, 1896, No. 35, p. 418.

Poisoning by Copper Sulphate.

Dott. Domenico Gentile reports four instances of probable poisoning by this substance. In all there was a history of previous good health, sudden onset of gastric disturbance more or less severe, speedily followed by pains, accompanied by dysphagia, cramps, headache, vertigo. The appearance of vomiting terminated the severity of the symptoms. In only one instance was there renal disturbance—trace of albumin, excess of urates and phosphates. It is probable that the copper used in viticulture against the *peronospera* in some manner found its way into the wine which had been drunk and thus gave rise to the symptoms.—*La Riforma Medica*, 1896, No. 42, p. 404.

Cocaine and Cocainism.

Dr. A. Sallard places the fatal dose for healthy subjects from eight to twenty-three grains, while a patient suffering from prostatitis died after an urethral injection of the smaller quantity. The symptoms of acute poisoning are somewhat variable, fugitive vertigo, in nervous subjects symptoms of excitement, tingling of fingers and toes, ringing in ears, irresistible impulse toward movement, gesticulation, extreme loquacity, attacks of anger, weeping, or nervous crises. Sometimes there are depression, vertigo comparable to sea-sickness, palpitation, loss of consciousness, facial pallor, mydriasis, cold extremities, and profuse perspiration. Convulsive phenomena indicate a profound intoxication, but not incompatible with recovery, provided that they remain moderate and at sufficient intervals. If there is dyspnœa from tetanus of the respiratory muscles and increasing cyanosis, asphyxia is indicated, and this will be the cause of death and is absolutely characteristic of acute intoxication. Poisoning of rapid progress is almost entirely due to the introduction of the poison into the general circulation by hypodermatic methods, instillation, or application. The duration of the symptoms is generally short, death or recovery soon taking place. Cerebral anæmia is usually slight, and disappears in from one-half to one hour; but convulsive accidents leave more marked traces, the normal condition only being reached after two or three weeks. To avoid these dangers various expedients have been proposed —association with glonoin (Gauthier), cocaine phenate (Oefèle and Glück), tropa-cocaine (Goesel). Magitot proposed the following precautions: The dose to be proportional to surface of anæsthesia; avoid neuropathics; subjects suffering from cardiac or respiratory diseases; avoid introduction into veins; keep the patient in a horizontal position; use only a pure drug; introduce by fractional doses, first using only an experimental injection of one-sixth of a grain. The treatment depends upon the symptoms; loquacity will disappear of itself, syncope by horizontal position, percussion of face and chest with

wet towels, inhalation of ammonia, acetic acid, or, better, amyl nitrite, injections of ether or caffeine, or possibly morphine hypodermatically (Chouppe). Chronic intoxication shows itself by a general depression, loss of appetite, palpitation, headaches, and vertigo, or, further advanced, trembling, profuse perspiration, syncope, and even epileptiform attacks. Symptoms of delirium are usually the result of sensory hallucinations of various kinds; various tactile sensations are common; diverse forms of hyperæsthesia, cramps, and lightning-pains. There are also hallucinations of sight and hearing. At last come mental failure and weakness of the memory, complete loss of will-power, until finally the *habitués* become veritable children, weeping at every turn. The bodily condition is more impaired as the delirium becomes marked, emaciation is rapid, the eyes hollowed, pallor extreme, pulse thready, dicrotic, and irregular, blood-tension lowered, syncope frequent, and respiration often accelerated. The almost complete anorexia, digestive disturbances, and diarrhœa result in marasmus which may end in death. The treatment, immediate and total suppression of the drug, is almost always possible, but confinement in a hydrotherapathic establishment is essential. As adjuvants are the general tonics, as iron, quinine, arsenic; heart drugs, as coffee, sparteine, digitalis; hypnotics, as chloral, sulphonal, trional; nourishing food, open air, massage, systematic gymnastics, and hydrotherapy.—*Revue de Thérapeutique*, 1896, No. 6, p. 163.

[We have noted, in several instances of chronic habituation, inconsistent and unwarrantable mendacity as a constant and well-marked symptom, which persisted after the cure was otherwise complete.—R. W. W.]

The Danger of Antipyretic Medication when Obtained by Drugs of the Aromatic Series.

M. Bardet quotes Dujardin-Beaumetz, who declared that the lowering of the temperature by these toxic methods was always obtained to the detriment of the patient. He would combat the opinion that admits the supposition that antipyretics are dangerous because of any accessory toxic action. On the contrary, it is the method itself which we should fear, and not certain antipyretics only, because it is always dangerous for the organism to employ drugs which are capable of interfering with oxidation. The thermic elevation is the least important of the phenomena which we observe in the majority of cases of fever. Entirely different is it with the symptoms of intoxication due to toxic leucomaïnes which fill the tissues, and to the extractive matters resulting from incomplete combustion—these are true causes of the infectious condition of the patient. The true therapeutic indication is to favor the elimination of toxic material. Since this is slightly soluble it is necessary to change it so that it can be eliminated. This can be accomplished by oxidation, which burns up toxic products and changes them into soluble, harmless substances. The antipyretics delay oxidation, and therefore interfere with a method of defense of the organism; therefore they should always be banished from the rational therapeutics of febrile diseases. When the degree of temperature becomes alarming, cold baths will abstract heat and at the same time not interfere with the phenomena of oxidation. The aromatics should be rejected as antipyretic drugs, not because they are

toxic, but because the principle itself of antipyretics is vicious. These drugs should only be used as analgesics.—*Bulletin Général de Thérapeutique*, 1896, 5e liv., p. 158.

Scopolamine as a Mydriatic.

Dr. Arthur G. Hobbs states that this drug occupies a middle ground between atropine, which is known to produce a complete paralysis of the accommodation and retain its effects for a week or ten days, and homatropine, which is claimed by some, and denied by others, to effect a complete control of the accommodation-muscles and retain its effects for about forty-eight hours. In the first case the time necessary to accomplish a full paralysis ranges from two and a half to three and a half days, and in the second ninety minutes to two hours, according to its advocates. If a $\frac{1}{10}$ per cent. solution of this drug be used, with intervals of fifteen minutes between the instillations, for one hour, the full effect is reached quite as completely as that produced by a three days' use of atropine. The paralysis lasts from one and a half to three days. In simple refraction cases it is to be preferred to the latter drug, because it does its work much more quickly, while its decline is at the most only about one-fifth, and oftener only one-sixth, of the time required by atropine. It produces no unpleasant effects in the throat, and if the patient can take but little time from his work, a solution of eserine (1 : 3840) can be used to reduce more rapidly the pupil. The drug is used in weak solution in cases of glaucoma with very small pupils, and in some cases of iritis when atropine failed to produce sufficient dilatation of the pupils. It is used most frequently in a $\frac{1}{40}$ per cent. solution, rarely for some special reason (history of a former resistance) as strong as a $\frac{1}{10}$ per cent. It produces no increase of tension, and hence the old eye, even if it be glaucomatous, does not restrict its use, as in a greater or less degree it would in the use of other mydriatics.—*Journal of Practical Medicine*, 1896, No. 10, p. 428.

Hypodermatic Injections of Myrtol.

Dr. S. Artault de Vevey has frequently noted that injections of oil impregnated with eucalyptus are complained of by patients because they give rise to a smell of paint in the throat. Since myrtol has been recommended by Gubler as a remedy for catarrhal discharge from the bronchial mucous membranes, and this drug, an isomer of eucalyptol, when used as above has a slight but agreeable odor, he has made use of it in simple catarrh with emphysema, abundant muco-purulent secretions, bronchial dilatation, and pulmonary gangrene, as a 10 per cent. solution in sterilized olive oil. The dose is from one to two drachms each day, injected deeply into the buttocks. In case of tuberculosis with abundant expectoration an equal amount of guaiacol can be added. The odor of the latter drug is concealed, and, thus combined, the mixture is aromatic. No untoward results supervene unless it be that with certain patients there is some nervous excitement and dull headache, which even happens when eucalyptol is used. The drug is eliminated rather by the pulmonary area than by the kidneys, and also by the skin, giving an odor to the body-linen.—*Revue de Thérapeutique*, 1896, No. 6, p. 171.

Rectal Injections of Toxins and Antitoxins.

Dr. Paul Gibier has studied the effect produced upon certain animals by the rectal injections of the toxins and antitoxins of diphtheria and tetanus. He has reached the following conclusions: (1) In rabbits, dogs, and guinea-pigs, the rectal injections of relatively massive doses of diphtheria and tetanus toxins are followed by no apparent effects. (2) The rectal injection of even large doses of these toxins, many times repeated, does not produce the least degree of immunity against the toxin thus injected. (3) The rectal injection of doses of diphtheria and tetanus antitoxin, at least a thousand times larger than the preventive subcutaneous dose, is powerless to prevent death from a minimum fatal dose of diphtheria or tetanus toxin. (4) The rectal mucous membrane may retain the active principles of the toxins and the antitoxins, or it may destroy them. In case it permits their absorption the inference is indubitable that they are carried through the portal system to the liver and are destroyed by that organ.—*New York Therapeutic Review*, 1896, No. 2, p. 27.

The Treatment of Diffuse Bronchitis in Children.

M. Renault believes that a simple and harmless method consists in giving a bath at 100.4° F. for seven to eight minutes every three hours, until the temperature, taken three hours after the last bath, has reached 102.2° F. After the third or fourth bath the fever falls without again rising, and the disease becomes a slight bronchitis, without, however, even becoming capillary. The only drug which is employed is quinine sulphate, which acts as a general tonic.—*Journal des Praticiens*, 1896, No. 13, p. 205.

Phenol Sulpho-ricinate.

Dr. Theodore Heryng has made use of this remedy in the treatment of tuberculous and chronic diseases of the pharynx, larynx, and nose, particularly hypertrophy of the nasal mucosa, ozæna, chronic nasal suppuration, diseases of the sinuses, pharyngitis sicca, retro-nasal catarrh, syphilis of the throat and tongue, pachydermia of the posterior wall of the larynx, laryngeal new growths (papilloma), and, finally, rhino-, pharyngo-, and laryngo-scleroma. The preparation of sulpho-ricinic acid requires ten or twelve days, and in general is the result of the action of sulphuric acid on castor oil, washing with an aqueous solution of sodium chloride and neutralization with caustic soda and filtration, with subsequent purification. The final result, when the process is carried out with various precautions enumerated, is a yellow liquid of syrupy consistence, of a specific gravity of 1025 to 1030. The chemical formula is $C_{18}H_{33}O_2.OSO_3$. This substance possesses, according to Berlioz, antiseptic and disinfectant properties. It will dissolve many otherwise with difficulty soluble substances, *e. g.*, phenol, 40 to 50 per cent.; beta-naphtol, 10 per cent.; salol or salicylic acid, 15 per cent. With the first it is only necessary to place the requisite amount of synthetic phenol in a water-bath with sulpho-ricinic acid, when a perfectly clear solution without precipitation results; all preparations not fulfilling these conditions are impure and should be rejected. It should be remembered that this solution is

not a new chemical compound, but a mixture. The 40 per cent. solution is not caustic when applied to the mucous membrane of the upper air-passages, although it produces a burning taste upon the tongue, and in sensitive individuals an unpleasant sensation for an hour after its application. In the nose a 30 per cent. solution is borne without reaction. In tuberculosis, before the first application, cocaine is necessary. Poisonous phenomena have not been noticed even after continued application.—*Therapeutische Monatshefte*, 1896, Heft 3, S. 125.

The Use of Nitroglycerin in Angina Pectoris.

Dr. Theodore Schott reviews the literature and concludes that it is most effective in clear angiospastic cases of angina. Next, where heart-cramp is dependent upon aortic insufficiency. In stenosis the result of myocarditis, fatty and "weakened" heart, it is not so useful. In chest-pain caused by aortic aneurism its action is at most only insignificant; as for the purely motor neuroses it is very rarely of advantage. In no patient can the result of its use be foretold, but from its use it can quickly be ascertained whether or not it is beneficial. Small doses are not toxic, and when these are not effective the amount can be increased. The form in which the remedy is applied is important; the best is the liquid—nitroglycerin, 2; tincture of capsicum, 25; purified alcohol, 125; and peppermint water, 125. Of this mixture the dose is from two to ten drops. Although other remedies are necessary in treatment of the underlying cardiac conditions, yet for angina pectoris nitroglycerin will always play an important part.—*Therapeutische Monatshefte*, 1896, Heft 3, S. 139.

The Physiological Action of Kola.

Dr. G. Walter Barr believes that this drug has a special action upon the cerebro-spinal and sympathetic nervous system, which is not at all like that of caffeine, and is due to some other active principle. The primary action is an increase of functional power in the cerebro-spinal system, and an increase of functional activity in the sympathetic system; overstimulation reverses the action, as is the physiological rule; but there is no after-depression of the cerebro-spinal system and none of the sympathetic except from massive doses, and then only of the portion most sensitive to the action of the drug—certain reflexes and venery. The overstimulation-paresis of the cerebrum has marked physiological effects, which are dangerous if the toxism be continued. The action of this drug upon the cerebro-spinal system has marked manifestations in the muscular system. The action upon the sympathetic causes increased peristalsis and secretion, contraction of the arterioles, and consequent rise of tension, the latter being partly due to increased heart-action, and this last being another manifestation of stimulation of the sympathetic ganglia. There is primary increase of the reflexes and venereal power, which is reversed from overstimulation of that part of the sympathetic before the other less sensitive portions are depressed. The urine is lessened. There is no approach to the formation of a habit, and no tolerance is established. Euphoria is marked. Excretion often does not take place for over six hours, and the overlapping of doses sometimes produced toxic effects when

each dose was medicinal. There is such variation in susceptibility that no physiological data can be of value. The drug must be used with discretion, and, like all drugs acting markedly upon the sympathetic nervous system, is apt to produce untoward effects in certain individuals. The antidotes for its toxic effects are strychnine and hard exercise. Death will probably come from cardiac paralysis, but it ordinarily requires massive doses to produce this.—*Therapeutic Gazette*, 1896, No. 4, p. 221.

The Biniodated Oil of Panas.

Dr. Rochon-Duvigneaud states that this is prepared as follows: 1. The oil is purified by agitating superfine virgin olive oil, 100; with 95° alcohol, 30; for four or five days, and then decanting. This removes the oleic acid. 2. The oil is now sterilized in a capsule for ten minutes at a temperature of 230° to 239° F. Above this temperature there are discoloration and emission of carburetted gas—a sign of decomposition. The temperature is now allowed to fall to 149° or 158° F., when mercuric biniodide is added to the amount of four-tenths of 1 per cent. until complete solution is obtained. The temperature is maintained at the degree above named, making use of a thermometer as a stirring-rod. Below this temperature the mercury will not dissolve; above this it becomes yellow and insoluble. The sides rather than the bottom of the capsule should be heated so that the mercury at the bottom shall not be overheated and thus rendered insoluble. To prevent the mercury forming masses with the oil it is preferable previously to rub up the mercury with a little sterilized water to form a paste. After the mercury is well dissolved in the oil it should be filtered through sterilized cotton into perfectly dry, sterilized flasks, and kept protected from the light. The injections for syphilis are made every second day, and are not hypodermatic, but intramuscular, the needle being vertically thrust into the tissues up to the guard; the site of election is the buttock between the crest of the ilium and the ischium, the patient being sitting. There is but slight pain; the nodosities are small and not well marked, and abscess has not occurred.—*Journal des Praticiens*, 1896, No. 13, p. 197.

The Diuretic Action of Sambucus Nigra [Elder].

Dr. G. Lemoine, in 1888, succeeded in establishing diuresis, when other methods had failed, by the use of an infusion of the bark, the patient being a woman suffering from general anasarca, pulmonary œdema, and ascites, the result of a subacute nephritis. The properties most desired seem to exist in the second bark, but all attempts to isolate an alkaloid or glucoside have failed, although it has been found to contain, among other substances, valerianic acid, fat, tannic acid, and salts of potassium. The last investigations have been made with an alcoholic fluid extract, to which the name sambucinum has been given. So far this preparation has been used to obtain diuresis in nephritis and diseases of the heart and liver. It is apparently powerless to relieve the dropsies which accompany cardiac asystole, but when diuresis has been commenced with digitalis or caffeine it seems to continue in large amount. No unpleasant effects have been observed; even in albuminuria it apparently does not increase the renal congestion. It may give rise to a

diarrhœa or rather increase one already existing, but this need not be objectionable in assisting the evacuation of the œdema. The dose is one-half an ounce.—*Bulletin Général de Thérapeutique*, 1896, 6e liv., p. 252.

Albuminuria and Subacute Uræmia following the Application of a Blister.

Dr. H. Huchard reports a single instance in which a young girl, for the relief of gastric disturbance with obstinate constipation and severe abdominal pain, received over the stomach a blister rather more than two by three inches in size, which remained in place ten hours. The urine, before its application, was found to be free from albumin. Five days afterward swelling of the face and sharp lumbar pains were complained of, and albumin was found in the urine. In spite of a milk-diet, disturbances of vision, persistent headache, nocturnal agitation, intense dyspnœa, accelerated respiration, nausea and vomiting, convulsive attacks in face and limbs, and almost complete amaurosis supervened. The urine became reduced to about twelve drachms in amount and very albuminous. After active treatment, calomel and scammony, venesection, wet cupping over loins, purgative enemata, theobromine, wet packs, and enteroclysis, rapid recovery took place. In conclusion it may be stated that we well know the inconveniences and dangers of a blister, and that in the majority of diseases there is no advantage in its use.—*Revue de Thérapeutique*, 1896, No. 7, p. 195.

M. de Crésantiques has observed two patients who died after the application of blisters. In case of febrile diseases a catharidal blister should not be prescribed, because the kidneys are already irritated by the passage of toxic urines, and there is necessity for great care of these organs.—*Bulletin Général de Thérapeutique*, 1896, 6e liv., p. 187.

The Treatment of Erysipelas by Antistreptococcic Serum.

M. Bolegnesi cannot agree with Chantemesse, who, after twelve months' use of Marmorek's serum, is of the opinion that it should be applied to the exclusion of all other methods of treatment. In considering statistics of this disease the various grades of severity which this disease presents must be considered. It may be remarkably mild or severe, as in old individuals and alcoholic subjects. Further, returns of the disease are common, and subsequent attacks are milder because of the attenuation produced by the previous ones; at least two-thirds of the cases fall in the last category. The remainder are severe because they are acute or have attacked aged individuals or those whose nervous system, heart, and kidneys are in poor condition, or, again, on account of the great virulence of the streptococcus of Fehleisen. Quoting his own results: Making use of boric vaseline, six died of two hundred and fifty—a mortality of 2.4 per cent. Ichthyol ointment was used in two hundred instances, at least one-half of these were acute. The mortality was 2 per cent.—the four deaths were at the ages of seventy-three years, seventy years, sixty years, and forty-two years. The method of Juhel Renoy, principally by ichthyol-traumaticin, gave one death in one hundred and fifteen patients—a percentage of 0.90. Contrasted with these results should be placed

the statistics of Chantemesse of one thousand and fifty-five cases, of which thirty-four were fatal—a mortality of 3.22 per cent. The treatment may be summarized as follows: 1. In benign cases all local treatments are justifiable, provided that they do not injure the skin; preference is for ichthyol ointment. 2. Clearly acute cases of regular progress should receive the treatment of Juhel Renoy—ichthyol-traumaticin—which will be more than one-half of the cases. 3. Severe cases should receive the cold bath of from twelve to fifteen minutes at 64.4° F. every three hours, with effusions upon the neck. In very severe cases, complicated by anuria and cardiac irregularity, these baths should be given every two hours, lasting only from five to seven minutes, with effusions during the entire time of the bath.—*Bulletin Général de Thérapeutique*, 1896, 40e liv., p. 110.

Anal Pruritus.

Dr. L Brocq insists upon (1) absolute suppression of wakefulness, fatigue, all kinds of excesses, and physical and intellectual exhaustion. He prescribes tranquillity, and, when possible, country life, outdoor exercises, avoidance of bicycle and horseback exercise. All excitants are prohibited, tobacco, coffee, tea, *liqueurs*, alcohol, strong wines, pastry, preserved fish, game, truffles, *pâte de foie gras*, and old cheese. (2) Regulation of the passages and not to visit the closet before anointing the anus and surrounding parts with pure vaseline or fresh cold-cream. (3) Bathing the painful points, morning and night, with a decoction of cocoa-leaves, as hot as it can be borne, to which is added a glycerin solution of carbolic acid. (4) Keeping the anus well powdered with a mixture of powdered talc and zinc oxide. (5) Applying every third day a 20 per cent. solution of silver nitrate. (6) Using for severe attacks at dinner and bedtime a capsule containing seven grains of antipyrin. (7) Using hot sedative douches and static electricity.—*Journal des Praticiens*, 1896, No. 12, p. 182.

Tannalbin.

Dr. R Gottleib states that a preparation of tannin is desirable which remains insoluble in the stomach, and so does not interfere with its functions, and, further, is not readily soluble in the intestine, so that it may reach the lower portion of the small and even the large intestine. To meet this indication the observation that albuminous bodies after prolonged heating at high temperatures became soluble with difficulty, or even insoluble in the stomach, was made use of, and it was found that tannin albuminate behaved in the same way. This substance, after prolonged heating, became so resistant to pepsin-digestion that after several days' contact it remained undissolved. Further, the solubility of this in a 1 per cent. soda solution and in pancreatic digestion gave good reason for the opinion that the drug would be useful in the intestinal canal. These conditions were brought about after exposure for five or six hours to a temperature of 230° to 248° F., and the resulting preparation is a tasteless, pale-yellow powder, containing about 50 per cent. of the acid.

Dr. R. von Engel finds that in many cases, especially of chronic catarrh, that a direct action upon the alimentary canal is desirable. The mineral

astringents present many disadvantages, and we naturally turn to the vegetable or tannin-containing drugs. His observations were made upon forty patients, and did not develop any untoward symptoms. The dose is fifteen grains for adults and one-half the quantity for children, twice to four times daily, although the dose-interval may be considerably lessened, so that the daily amount may be administered within a few hours. The treatment may be continued for two to four days, even to twenty days if necessary. The patients do not complain of nausea, heaviness, nor vomiting. The conditions for which the drug is used are various intestinal catarrhs, congestions from circulatory disturbance, diarrhœa of chronic tuberculosis and of nephritis. In general, it is to be especially recommended in acute diarrhœas, chronic intestinal catarrhs, and the diarrhœa of tuberculosis.—*Deutsche medicinische Wochenschrift*, 1896, No. 11, S. 163.

MEDICINE.

UNDER THE CHARGE OF

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Lead-gout and the Influence of Lead-poisoning on the Excretion of Uric Acid.

Luethje (*Zeitschrift für klin. Med.*, Bd. 29, p. 266), working under direction of G. Klemperer, has published an exhaustive article on this subject, from which the following conclusions are quoted:

1. Investigation of the literature and some cases observed by the author prove a close relationship between lead-poisoning and gout.

2. It is possible that lead alone, without other etiological factors, is capable of causing gout.

3. Lead-poisoning has no influence on the excretion of uric acid. Lead does not cause retention of uric acid. The fact that in cases of lead-poisoning increased quantities of uric acid are found in the blood is due to overproduction. How lead does this cannot be determined. Lead is probably able to cause the so-called "gout-necrosis."

4. In order to bring on an attack of gout a very long-continued intoxication is necessary.

5. The clinical course of lead-gout exhibits some peculiarities as compared with the ordinary form. The first attack occurs, as a rule, at a relatively early age. It has a tendency to spread with great rapidity over many joints. Joints are frequently involved that are rarely or never affected in true gout

—hips, vertebræ, shoulder. Tophi and deformities are more marked than in ordinary gout.

6. The prognosis is always unfavorable, largely on account of the other results of lead-poisoning, especially contracted kidney.

Second Attacks of Measles and Immunity.

Gottstein reports the case of a girl who had measles for the first time at eight years, and a second attack two years later. From the origin of the infection and the clinical features the diagnosis seems quite certain. An interesting feature was that in the first attack the skin was severely affected, but the catarrhal symptoms were extremely mild. In the second attack the throat symptoms were severe and characteristic, but the exanthem did not appear until two or perhaps three days after the usual time, as indicated by the other symptoms, was imperfectly developed, and soon faded.

The author thinks the case illustrates the theory of immunity proposed by Schleich and himself two years ago. In the first attack the child did not acquire general immunity, since it was reinfected at the next opportunity. There was, however, a local resistance on the part of the organ most affected in that attack which modified the later one in the manner described.—*Münchener med. Wochenschrift*, 1896, No. 13.

Recovery from Tubercular Meningitis.

To the few cases positively recognized, Janssen, of Maastricht, adds the following: An infantry corporal, nineteen years of age, was admitted to the hospital on account of headache, stupor, and pain in the extremities. The previous history was negative; no tuberculosis; no syphilis. The headache was chiefly frontal. The conjunctivæ were injected, the pupils unequal; no strabismus. There was frequent vomiting; the bowels were confined; pulse 92, dicrotic; respiration superficial. The diagnosis of meningitis was confirmed by the after-history. The pulse became slower, reaching 42; the temperature was only moderately elevated; headache, often most intense, persisted; dilatation of the pupils, strabismus, opisthotonos, tâches cérebrales, hyperæsthesia of the skin, contractures in the left knee, involuntary evacuation of urine and feces, sordes on the lips, teeth, and tongue, and complete unconsciousness appeared. Sixteen days after admission the condition improved, and a month later the patient was discharged well. Later, symptoms of pulmonary tuberculosis came on, and the man died three months and a half after the onset of the meningitis. The autopsy revealed masses on both sides of the longitudinal fissure, 4 cm. long and not quite 2 cm. wide. These were made up of soft, friable tubercles, following the course of the vessels. Smaller tubercular masses were also present on the base of the brain and on the optic chiasm.

The treatment of the meningitis consisted in ice-bags to the shaved head, poultices over the whole body up to the neck, leeches to the septum of the nose, and potassium iodide, internally, in doses of at first 8 grammes daily, increased to 40 grammes—altogether 950 grammes. The drug was borne without serious effects. All the secretions contained iodine, and to this the

author ascribes the recovery (in which case it must be regretted that the treatment was not followed after the lung-tuberculosis was discovered).—*Deutsche med. Wochenschrift*, 1896, No. 11, p. 169.

The Diagnosis of Tuberculosis in Infancy.

A recent article by H. Kossel on "Tuberculosis in Early Childhood" contains some interesting details. The well-known difficulty of obtaining sputum was overcome by wiping the secretions out of the pharynx with a tuft of cotton. In several cases of pulmonary tuberculosis the bacilli were found in the feces. In some cases pus from the middle-ear was found to contain bacilli. Tuberculin was used for diagnostic purposes as follows: From 0.2 to 1.0 mg. was injected, and if no reaction followed five to ten mg. were injected. If the temperature rose, a similar dose was injected a second time, after defervescence, for the sake of greater certainty. Of sixty-three children so treated twenty-eight gave the reaction, and of these only four gave clinical evidences of tuberculosis.—*Zeitschrift für Hygiene und Infectionskrankheiten*, Bd. xxi. 41.

Inflammatory Enlargement of the Head of the Pancreas.

Riedel calls attention (*Berliner klin. Wochenschrift*, 1896, Nos. 1 and 2) to a rare but important disease of the pancreas. This is a process due to gall-stone, apparently without the co-operation of micro-organisms, in which the head of the pancreas becomes converted into a tumor of stony hardness. Though obstinate, a suitable operation may lead to recovery. Three cases were observed. At the autopsy of one of these, interstitial pancreatitis was found. The most important condition that may be mistaken for this is carcinoma, as happened in the first of Riedel's cases. The further course excluded cancer. In the second case the tumor was mistaken for the gall-bladder.

Tubercular Meningitis and Traumatism of the Cranium.

Schilling reports (*Münchener med. Wochenschrift*, 1895, No. 40) the case of a boy of eight years who showed brain-symptoms eleven days after a severe fall. Fracture of the inner table was suspected, with irritation by fragments of bone, but before an operation could be made the patient died. Autopsy showed tubercular meningitis and cheesy softening of the bronchial glands. It would seem most probable that the bacilli in the latter, where they were comparatively harmless, getting into the lymphatic vessels and circulating therein, found at the seat of the injury favorable conditions for their development.

Morvan's Disease and its Relation to Syringomyelia and Leprosy.

Prus (*Archiv für Psychiatrie*, Bd. xxvii., Heft 3) reports the following: A Galician Jewess, forty-six years old, began to feel pain in the right arm and weakness in the right shoulder. Then perforating ulcers formed in the

region of the left internal and right external malleolus, followed by painless whitlows on the fingers. Later, anæsthesia of the finger-tips, paræsthesia and pain in the neck and arms, anæsthesia of the tongue, loss of teeth, and difficulty in speaking appeared. Atrophy of the phalanges, anchylosis of the phalangeal joints of the toes, of the carpus and elbow came next; the fingers were greatly deformed; walking became difficult. Among the other symptoms present at the time of the report, eight years after the onset, were white spots on the skin of the hand, atrophy of the nails and various muscles, with reaction of degeneration, disturbance of sensation, vasomotor anomalies, and diminution of the skin and tendon-reflexes. By a very complete process of exclusion, described in full in the original, a diagnosis of Morvan's disease was made.

Examination of the blood disclosed, in addition to anæmia and leucocytosis, bacilli which had all the characteristics of lepra bacilli, and, as miliary tuberculosis was evidently not present, a diagnosis of leprosy was made.

Prus, therefore, takes sides with those who deny the existence of Morvan's disease as a distinct process and see in it merely a form of anæsthetic and mutilating leprosy. According to the author, too, many cases of syringomyelia belong to the same category. His explanation of the process is as follows: After the lepra bacilli have penetrated the skin deeply they develop in the sheaths of the cutaneous nerves and cause degeneration of the fibres. From this various trophic disorders and alterations of sensation may occur. Later the bacilli affect the larger nerve-trunks, so causing paresis and muscular atrophy. If the spinal cord is reached, the bacilli develop in the neuroglia, especially in the gray matter, causing growths of the glia with subsequent retraction, whereby cavities are formed. It is possible that other things besides leprosy can cause such processes in the cord, but only the bacteriological examination can decide in any given case.

Spastic Paralysis due to Multiple Sclerosis.

Lapinsky (*Zeitschrift für klin. Med.*, Bd. xxviii. p. 365) reports two cases of this kind. In the first the clinical features were those of a pure spastic paralysis from beginning to end, with the exception that a transitory incontinence of urine appeared early in the history. Post-mortem examination showed multiple sclerosis, with numerous foci in the brain and cerebellum and in all parts of the gray and white tissue of the cord.

In the second case there were temporary partial loss of sensation of the right hand and slight atrophy of the interosseous and volar muscles of the same. The diagnosis was spastic paralysis, probably multiple sclerosis. Autopsy confirmed the latter.

The author adds to the recital of these a study of the various processes that may produce the clinical picture of spastic paralysis. These are arranged in groups with reference to the original sources.

The group of cases of spastic paralysis with the anatomical basis of multiple sclerosis includes eleven references, not including the author's. In three others no autopsy was made, but the clinical diagnosis of multiple sclerosis was made later. In six of the former the clinical picture of spastic paralysis was especially distinct.

The article includes a description of the histological changes in the two cases, with plates.

On the Jaundice of Recent Syphilis.

Neumann (*Wiener med. Presse*, 1895, No. 45) gives the results of some recent observations. Within the last three years he has seen thirteen cases of jaundice in recent syphilis, nine of the cases being in women. In eight cases jaundice appeared at the same time as the eruption, in three after it, in two before it. In two cases there was recurrence of eruption and jaundice simultaneously. In ten cases there were no gastric or intestinal disturbances. An etiological relation between syphilis and jaundice may be claimed when the latter appears without gastric disturbance, when it appears at the same time as the exanthem, and when there is enlargement or tenderness of the liver; when there are other syphilitic intestinal diseases, and especially when specific treatment causes the jaundice to disappear. Neumann thinks the jaundice in these cases is most probably due to vascular changes.

The Enlarged Spleen of Cirrhosis of the Liver.

Oestreich (*Virchow's Archiv*, Bd. 142, p. 285) has examined a large number of cases of cirrhosis of the liver, post mortem, with the object of determining the cause of the splenic tumor. He finds that, contrary to the common idea, congestion has nothing to do with the enlargement of the spleen, either in atrophic or hypertrophic cirrhosis, and holds that the change is due to irritative processes independent of the liver. There is at first a cellular proliferation, with hyperplasia of the pulp, which later undergoes induration and finally atrophy. The follicles and vessels remain normal. The irritative substance is probably carried by the artery, and the anatomical similarity in different cases seems to indicate a single etiological factor.

Landry's Paralysis.

Remlinger reports the case of a healthy individual whose only previous illness had been a slight malarial attack, and who in one night was suddenly attacked with paraplegia. Following this the case pursued the typical course of a Landry's paralysis, with the exception that fever was absent and there was no loss of control over the sphincters.

At the autopsy no gross lesion could be made out in the cord, except that the gray substance at the margins of the anterior horns was a little reddened in color.

Cultures were made from the cord-substance in the cervical, dorsal, and lumbar regions, and all showed a pure growth of the streptococcus pyogenes. Cultures from the heart's blood were negative.

Sections of the cord were examined by Marinesco, and showed dilatation and inflammation of the vessels of the anterior fissure and their branches. The blood in these vessels contained a great excess of leucocytes, though not a sufficient number to block them entirely.

The cells of the anterior horns were free from bacteria, but between them,

probably in lymph-spaces, chains of streptococci could be seen in the cervical portion of the cord.

The dorsal and lumbar portions of the cord failed to show bacteria in the sections, though the cultures were positive. The only cellular lesion was one of rupture of the prolongations of the cells of the anterior horns.

There were no malarial parasites seen in the sections.

Remlinger states that this is one of the first cases in which a full bacteriological examination has been made.—*Comptes Rendus de la Société de Biologie*, April 3, 1896.

Chronic Membranous Bronchitis.

Claisse reports an interesting case of this disease in which he studied the bacteriology.

The patient had suffered from the disease for some years, and was constantly expectorating bronchial casts.

Cover-slips from the casts showed various organisms, and these were often impure, but in all of them streptococci were found.

Sections of the false membrane showed on the inner surface numerous micro-organisms of varying kinds, probably, Claisse thinks, coming from the saliva; in the depth of the membrane only streptococci were found.

The author concluded that the disease was due to the streptococcus, and the patient was put upon injections of Marmorek's anti-streptococci serum.

After two months' treatment the patient was discharged much improved, the cough and oppression across the chest having disappeared, and the expectoration having almost ceased.

The reaction to the anti-streptococci serum Claisse regards as further proof of the nature of the disease.—*Comptes Rendus de la Société de Biologie*, April 3, 1896.

Spasm of the Neck Associated with Optical Illusions.

Féré, after remarking on the fact that the history of functional spasms of the neck points to most of them being due to irritation of the motor cortex, calls attention to a case in which there were signs denoting also irritation of the sensory cortex.

The patient was a woman of forty-nine years, who had had no nervous symptoms until she was eighteen. At this time she was very much frightened by a deformed beggar, and following this fright became very nervous and subject to nightmares, in which she constantly dreamt of the deformed beggar, the vision always appearing on the right side, while on the contrary, at the time of the fright, the beggar had appeared on the left.

At the age of forty-five years she fell downstairs, and was much frightened, though not much hurt. Some weeks later she began to observe a spasm in the neck, the head being turned to the left. The spasm was at first intermittent, coming on after fatigue or an attack of insomnia, but the movements gradually increased, and she developed a typical spasmodic torticollis. The spasms disappeared during sleep, and were much improved by rest. The most annoying feature of the case was the fact that at the time of the spasm, when the head is half turned, there always appeared on the right-hand side

of the patient an image of the deformed beggar, which was exactly similar to that seen in her dreams. The hallucination appears with the eye either open or shut.

This case illustrates almost surely, Féré thinks, a cortical lesion producing both the torticollis and the optical illusion. Such cases are rare, but one case has been recorded in which a similar spasm was associated with auditory disturbances.—*Compte Rendus de la Société de Biologie*, March 20, 1896.

A Case of Hereditary Periodic Vomiting, Diarrhœa, and Vasomotor Disturbance.

Kelling (*Zeitschrift für klin. Med.*, Bd. xxix. p. 421) describes in full the case of a woman, aged forty-two years, whose grandmother and mother, as well as herself, had attacks coming on periodically, with dizziness, fainting, vomiting, and diarrhœa, preceded by œdema of the extremities, often migrating or appearing and disappearing in time in various parts. Urine passed during the attacks was more acid and more toxic than that passed afterward. The attacks seemed to be brought on by emotional disturbances, and had no relation to barometric changes. The author considers the condition hysterical. No drugs had any effect in preventing the attacks, though morphine was of benefit in lessening their severity and postponing them for a short time. Mental quiet, fresh air, good food, and at the time of the attack opium suppositories and a hot plate over the abdomen (for the relief of pain) were useful.

SURGERY.

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The Treatment of Glenard's Disease by Abdominal Section.

An interesting case of this curious abdominal disorder, with its cure by abdominal section, is reported by Treves (*Brit. Med. Journ.*, January 4, 1896).

The patient was a young lady, twenty-two years of age. She had been ill for six years with distressing but somewhat indefinite abdominal troubles. There was a tubercular history. Her trouble began with an acute abdominal disturbance attributed to an ulcer of the stomach or to ulceration in the small intestine. There was also the history of a fall previous to this attack. The symptoms present were a continued catarrh of the bowels. Abdominal pain almost constant. Vomiting was common, and the vomited matter was

usually intensely acid. It sometimes appeared to be composed solely of a very acid gastric juice. There were considerable digestive disturbances and still greater trouble with the bowels.

The patient had been for some time compelled to wear a belt to support the abdomen, and was unable to stand or move about without great discomfort unless this belt was in position. It was a formidable apparatus, and when in position caused a modification of the pulse of the arteries of the lower extremities.

When examined in the recumbent position the area of the hepatic dulness was normal, but when the examination was made in the erect posture the liver was found to have descended some two inches. The stomach also and the whole mass of the intestines appeared to fall downward. There was a certain amount of resistance with pain and tenderness over the region of the transverse part of the duodenum. The spleen shared in the general ptosis. The left kidney could not be felt. When in the erect posture much complaint was made of pressure upon the bladder.

An incision was made, in the operation, in the median line a little below the xiphoid cartilage. The liver and stomach were found dragged down to a remarkable degree; the great omentum was rolled into a cord and adherent to a mass in the upper part of the right iliac region. An incision over this mass showed it to be a collection of old tuberculous glands that were caseous and one calcareous and of stony hardness.

An examination of the abdominal viscera showed nothing abnormal but the position. The liver and stomach were returned to their normal position and fastened by stout silk sutures. The most important stitch was passed through the liver near its edge and penetrated the round ligament, which afforded a most suitable holding. The other stitch involved the round ligament and falciform ligament. Above, the sutures were passed through the fibrous structures of the parietes by the side of the xiphoid cartilage.

The patient made an excellent recovery and the troubles due to the ptosis vanished.

A New Aseptic Method of Closing Wounds without Sutures.

The great difficulty often experienced in closing wounds where sutures are impracticable or where they are liable to slough out from too great tension has been overcome in a great measure by Schürmayer (*Cent. für. Chir.*, 1896, No. 3, p. 49).

The use of adhesive plasters instead of sutures is not thoroughly aseptic, and to overcome this defect the author uses pieces of fine platinum wire having hooked ends. These wires span the wound, and can be rendered aseptic by flaming. At either end they are hooked into strips of adhesive plaster, that in case of a limb encircle it, so that with the wire they entirely surround it. The ends of the adhesive strips are folded upon themselves to prevent their adhering, and the hooked ends of the wire are passed through punctures in this double thickness. Aseptic gauze is laid on the skin beneath the ends of the wire to prevent infection of the wound from the adhesive plaster.

The great advantages of this method are that the tension is applied at a

distance from the margin of the wound; that the wires alone come in contact and may be perfectly sterilized; they can be easily removed, either singly or all together during the dressing and then replaced; there is no strain upon the edges of the wound during their removal, and coaptation of the margins of the wound can be secured as easily and perfectly as by the use of sutures.

Note on the After-treatment of Gastrostomy Cases.

Golding-Bird (*British Med. Journ.*, January 4, 1896) describes the following method of preventing leakage of the stomach-contents after gastrostomy:

On the fourth day after the attachment of the stomach to the parietes the viscus was opened only enough to admit a No. 10 catheter, and then this small opening was dilated with tents till a short piece of rubber tubing, the thickness of the forefinger, could be introduced and tied *in situ*. The stomach-walls—from mere physical reasons—contracted now firmly round the tube, and from the time of its introduction there was not a vestige of leakage. The tube, which only projected just into the stomach, and about one inch externally, was kept corked, the cork being removed at meal-times; and then with a funnel and a tube which would pass into the lumen of the permanent tube the patient easily fed himself.

A Contribution to Brain-surgery, with Special Reference to Brain-tumors.

In connection with the discussion of the indications for operation in the case of brain-tumors, Starr (*Medical Record*, February 1, 1896) says that the only type of epilepsy in which a question of operation can arise is that of so-called cortical epilepsy, where an irritant lesion of one region of the brain produces localized spasms. Such lesions may be of traumatic origin, as in fractures, localized meningitis, small hemorrhages or cysts, or the epilepsy may be the first sign of a beginning tumor, abscess, or sclerotic patch. It is for this class of cases that operations have been very largely undertaken in the past and are still being done.

The results obtained in such cases are, however, disappointing to this author, although after the operation a cessation of attacks may occur; these attacks are almost certain in the end to recur, and hence the patients are not actually cured. In cases in which the brain-substance has been injured the cicatrix resulting from an operation will be no less harmful than the one removed.

In regard to tumors, the difficulties in the way of operation are, first, the difficulty of locating the tumor accurately from the symptoms alone, and, second, the difficulty of reaching the tumor when accurate localization is possible. The removal of a portion of the skull for the relief of pressure is advocated by many surgeons, even when the tumor cannot be accurately located or removed. The author believes this is justifiable, as even though it may not be curative it is often palliative and lengthens the life of the patient, while it relieves him, though possibly only temporarily, of some pain. There may be produced also marked changes in the circulation which will permit the absorptive power of some drugs to come into play. For it is not

to be forgotten that there are cases of brain-tumor in which the diagnosis is perfectly certain which have recovered under the use of mercurial inunctions together with very large doses of iodide of potassium. The author illustrates this fact by a case in which a complete recovery followed this method of treatment in a young boy with a perfectly clear non-syphilitic history. This case shows that even in some individuals in whom there is no history of syphilis medical treatment for a brain-tumor occasionally succeeds.

In regard to the radical cure of tumors by operation, accurate diagnosis and the possibility of reaching the tumor are necessary. It is now possible to distinguish sharply between the general symptoms common to tumors in any location and those that are strictly local in their significance. One local symptom to which the author calls especial attention is the change in the percussion-note elicited by auscultatory percussion of the skull, to which Macewen first called attention, and which the author has confirmed; that is, on the side of the abscess or tumor there is sometimes found a clearer, high-pitched, and more resonant note than upon the opposite side.

In a small proportion of brain-tumors it seems easy to determine the fact that the tumor must lie in a definite position, and if this position is upon the convexity of the hemisphere where access to it through the skull is easy, it seems justifiable to undertake an operation. Another difficulty in the way of operation is the fact that the nature of the tumor is always a matter of uncertainty until the tumor is exposed.

It is only when the tumor is small, lies on but does not invade the cortex, and can be removed without serious damage that the prognosis is absolutely good.

The author continues with a table of the results of operations for brain-tumors, a table of the variety of tumors removed and the results, and a complete bibliography of all tumors trephined for and removed; trephined for, found, but not removed; and trephined for, but not found.

Traumatic Diastasis of the Acromio-clavicular Joint.

Bähr (*Cent. für. Chir.*, November 2, 1895) reports a case of diastasis of this joint, and comments upon the difficulty of diagnosis and the rarity of the recognition of this common traumatism.

This traumatic diastasis is the consequence of an injury to the ligaments, which are not sufficiently injured to produce a luxation of the clavicle. It may result from traumatism or from a partially healed luxation of the clavicle or even an oblique fracture involving the joint. The diagnosis is difficult in fresh cases; the ordinary symptoms are not markedly present. The most certain symptom is a gliding of the acromion beneath the clavicle on abduction of the arm and the reduction when the arm is adducted. There is great pain on abduction, so that etherization is sometimes necessary.

The Treatment of Fracture of the Patella with Continuous Extension and without Confinement to Bed.

Bryant describes, in the *Medical Record*, 1896, vol. xlix. No. 14, the following method of treating recent fractures of the patella, which he has found

satisfactory in thirteen cases. The plan is presented, the author says, not as a substitute for operative measures, but as an adjunct to them, as the patient can with this appliance be about without special danger or discomfort after wiring, etc.

A plaster-of-Paris cast is applied to the leg, beginning at the bases of the toes and extending up to and partly embracing the lower fragment of the patella, and allowed to dry. An ordinary Buck's extension is next applied to the thigh. The adhesive plaster extends from the perineum to the upper border of the upper fragment and terminates in a loop at either side of the limb a little below the knee. After the plaster has become firmly adherent gentle traction is made by attaching elastic cords, which pass under the sole of the foot to the loops on either side of the knee, and a plaster-of-Paris cast is applied to the thigh, reaching from the upper limit of the adhesive plaster down to the upper fragment, where the plaster is so fashioned and padded as to hold it as nearly as possible in contact with its fellow. A posterior support or splint is then applied and secured with a plaster-of-Paris bandage. The final step consists in drawing together the fragments of the patella as firmly as possible, either with adhesive strips obliquely applied or by means of a knee-cap suitably constructed.

After the apparatus is comfortably in position the patient is permitted to walk about with the aid of crutches, the limb being kept in an advanced position however by a sling carried beneath the sole of the foot and around the neck of the patient.

The Treatment of Abdominal Injuries without External Wounds.

In reference to injuries of the kidney, Bryant (*The Lancet*, Jan. 11, 1896) says that crushed kidneys rarely require surgical interference, as they recover of themselves. In injuries of the intestines, however, the case is entirely different; a ruptured intestine is probably present, though this is not certain, when, after a diffuse injury to the abdomen or a severe local injury, as the immediate result of the accident there is little collapse, and where vomiting soon becomes a prominent and persistent symptom, with lasting local pain and great thirst, with or without abdominal enlargement. The author's notes of nineteen cases of rupture of the intestine confirm the truth of this statement.

With the presence of these symptoms, therefore, in any case of abdominal injury brought about by forces which are likely to have produced such a rupture, and particularly if they have persisted for eight or ten hours and collapse has not been present, or, if present at first, has passed away, Bryant would hold any practitioner free from blame if he suggested and caused to be carried out what is called a laparotomy—that is, an exploratory abdominal incision—with the view of searching for and uniting a ruptured bowel if found to be present, or of arresting bleeding and giving a chance of life to a young subject or strong middle-aged man. But this measure, to prove successful, must be undertaken early—that is, not later than twenty-four hours after the receipt of the injury, and earlier if possible—for it seems that death within thirty-six or forty-eight hours of the accident is the rule, whilst some die earlier and a few later; but it is clear that the earlier the operation

is performed the greater may be the chance of success. In old or feeble subjects such a measure is, however, out of the question, but in young people and healthy subjects it ought to be undertaken.

Surgical Treatment of Cancer of the Pylorus.

Quenu (*Rev. de Chir*, 1895, No. 10) reports two interesting cases which he believes prove that pylorectomy is a justifiable operation even in cases in which relapse is certain or nearly so, and that in all cases a gastro-enterostomy will give great relief from troublesome symptoms, while, at the same time, it builds the patient up, increases the vitality, and renders what remains of life more agreeable. In one case reported, although death from recurrence occurred one year after the pylorectomy, the patient during that time was entirely relieved from pain, vomiting, and many other unpleasant symptoms, and regained flesh and strength. Quenu believes also that an exploratory incision is justified by the presence of an induration in the gastric region accompanied by dyspeptic symptoms.

If the exploratory operation shows a non-operable cancer of the pylorus, either too diffuse or that has already involved too many lymphatics or is too adherent, he advises the performance, as a palliative measure, of a gastro-enterostomy by means of Murphy's button.

If the cancer is operable, he advises a gastro-enterostomy, to be followed, eight or ten days later, by a pylorectomy.

The performance of the operation in two stages he believes has the advantage of greater rapidity in the pylorectomy, and the chance to build the patient up between the operations.

Colotomy and Conditions Requiring such Operation.

Wheeler (*Dublin Med Journ.*, January, 1896) describes his method of operating as follows: In inguinal colotomy a short perpendicular incision about three inches long is made external to the epigastric artery in the groin. As soon as the peritoneum is opened the omentum generally appears, the peritoneal wound may be enlarged, and the divided peritoneum is sutured to the skin by carbolized silk—this lessens the risk of oozing from the cut surfaces entering the peritoneal cavity. The sponge previously placed in the peritoneal cavity is now removed and the sigmoid flexure presents; if not, it may be found by tracing from the descending colon down or from the rectum up, or by passing the finger in upon the iliacus muscle; the large intestine may be felt.

The gut having been brought through the wound, a sufficient portion of intestine with a moderately long mesentery is obtained. A silk ligature is passed through the mesentery, and it is sutured to the parietal peritoneum on each side, taking care that the gut is well protruding. In cases of a moderately long mesentery, indeed in all cases in which there is sufficient mesentery to admit of a good span, he also sutures the mesentery to the parietal peritoneum, about two inches from the protruded portion of gut at the lower or distal end. This is a most important step to prevent subsequent procidentia. Two or three points of suture passed through the serous and

muscular coats of the intestine and the edge of the parietal peritoneum, where it joins the skin, complete the operation. After ten to twelve hours the gut becomes adherent and may be opened when it is indicated, but this need not be done for two or three days if the patient is comfortable.

DERMATOLOGY.

UNDER THE CHARGE OF

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Eruptions of Palustral Origin.

Brocq reports (*Annales de Dermatologie et de Syphiligraphie*, 1896, No. 1) an extremely interesting case of circumscribed eczema-form eruption due to malarial poisoning. The patient was a woman, about forty years of age, apparently in good health, who had already been under treatment several times for a rebellious eczema of the hand two or three years previously. Upon the end of the nose, on the left side, was a small eruptive plaque of irregular contour, but oval in its general aspect, about a centimetre high and a centimetre and a half in its transverse diameter. The base was red, slightly swollen, and congested; upon its surface were papulo-vesicles, seven or eight in number, grayish-yellow, and slightly oozing. The sensation experienced by the patient was slight burning rather than itching. This sensation was most marked in the morning upon awakening and disappeared in the afternoon. The eruption had lasted about a month and had extended but little. No other eruption was present upon any other part of the body, the patient being completely cured of her eczema of the hands. The diagnosis was for a time in doubt, but close observation of the case showed that the eruptive plaque underwent quite regular variations: thus it enlarged some days before the menstrual period, becoming more swollen, red, and oozing. Every morning, upon awakening, the lesion was very much inflamed; a very abundant, transparent, serous liquid oozed from the vesicles. It was ordinarily about 4 or 5 o'clock in the morning that this congestive attack occurred; it was announced by a kind of localized fever, the patient experiencing throbbing and a sensation of tension and burning. These phenomena reached their maximum between 7 and 9 o'clock in the morning; then they gradually diminished in intensity. About 2 o'clock in the afternoon the oozing ceased and the turgescence disappeared. By 6 o'clock the lesion was scarcely visible. Upon inquiry it was learned that, although the patient had never had a veritable intermittent fever, she had had diverse manifestations of paludism

which had yielded only to quinine in large doses. She had lived for several years where intermittent fever was prevalent. In view of this history the patient was given hydrochlorate of quinine in daily doses of 80 centigrammes, the local treatment being limited to the application, in the morning, of poultices of potato starch, and in the afternoon to a simple ointment of oxide of zinc. The effect of the quinine was extraordinary; at the end of forty-eight hours the morning congestive attacks had ceased, the oozing stopped, and at the end of four days the lesion was no longer elevated and was undergoing resolution. After a time the patient ceased all treatment, when the eruption returned, but again yielded to quinine.

From a study of this case the author concludes:

1. It should be placed among those dermatoses still badly known, which constitute the pure and true cutaneous form of masked paludism.

2. In the presence of a rebellious dermatosis, with unusual symptoms, one should think of the possibility of paludism.

3. Quinine and arsenic are in these cases the remedies.

4. The class of "paludides" timidly proposed by Verneuil and Merklen ought to be accepted.

Pathology of Pigment-anomalies of the Skin.

Orlandi (*Monatshefte für Derm.*, Bd. xxii. No. 6) describes several cases, and makes the observation concerning the pathogenesis of these affections that they are connected with the sympathetic, not with the entire sympathetic, but with the fibres which are prominent in governing pigmentation. From the observation that vitiligo is incurable, and that chloasma on the other hand sometimes passes away spontaneously, the writer questions if there may not be an alteration of the involved sympathetic fibres in the former, and merely an irritation in the latter.

Pityriasis Alba Atrophicans.

Krösing reports a case of this rare and curious affection (*Dermatologische Zeitschrift*, 1896, Bd. iii., Heft 1). The patient was a man, forty years of age, in good general health, without any history of any inherited tendency to cutaneous disease. The alterations in the skin occurred on both lower extremities and were the same on both sides. Around the ankles the skin was livid, thin, tightly stretched, and covered with variously sized, grayish-white, shining, for the most part firmly clinging, scales. Owing to the stretching of the skin the natural marking had disappeared and it was no longer possible to pinch it up in folds. The subcutaneous fat also seemed to be atrophied and the skin seemed to lie closely upon the tendons and the bone. Movements of pronation and supination of the foot were hindered in some degree by the tightness of the skin. The venous network was clearly visible through the thin skin. Upon the leg the scales were more delicate, thinner, bran-like, and less firmly adherent, so that they could be in great part wiped off with the hand. The muscles of the calf were also diminished in volume. In the hollow of the knee the skin was tightly stretched, so that extending of the leg was disagreeable. Upon the thigh the changes were less marked, since they were of more recent origin. On both sides the affection

reached in front to the groin, behind to the lower border of the gluteal muscles. Sensibility, patellar reflex, and electrical excitability were norma. The disease had begun, when the patient was thirteen years of age, on the left ankle, with the appearance of a dry, scaling pale spot which burned slightly rather than itched. This spot had never been reddened, swollen, or moist nor had any other change in the skin—papules, vesicles—preceded the appearance of the scales. This dry scaling gradually extended over the whole lower extremity. The disease did not begin upon both extremities at the same time, the left one having been affected ten years before the right one. Histological examination of excised portions of the altered skin showed marked atrophy of all parts, but no evidences of inflammatory change.

Tuberculosis of the Wrist Cured by Injections of Cantharidate of Potassa.

At a meeting of the Société Française de Dermatologie et de Syphiligraphie (*Annales de Dermatologie et de Syphiligraphie*, 1896, No. 1), Brant-homme reported a case of cutaneous tuberculosis cured by this method. Upon the upper part of the right hand and the lower part of the wrist was a lesion the size of a five-franc piece, which had been treated by various means for fourteen months without result. Recourse was had to cantharidate of potassa, a solution of which, prepared according to the following formula, was injected hypodermically: Cantharidate of potassa, 0.001 gramme; hydrochlorate of cocaine, 0.10 gramme; distilled water, 10 litres. One cubic centimetre of this solution was given at each injection, and eight injections were given in a period of about three weeks. The injections were quite painful and one was followed by abscess. The first two were followed by elevation of temperature –39 3° C. and 39° C.—and local reaction which manifested itself by quite marked exudation. These phenomena did not appear at the third injection, at which time cicatrization began. At the time of the report cicatrization was complete.

A Case of Rhinoscleroma Originating in the United States.

Wende reports (*Journal of Cutaneous and Genito-urinary Diseases*, March, 1896) a case of rhinoscleroma occurring in the person of a boy, eleven years of age, born in the United States, of American parents. The family history of the patient was good and he was apparently strong and robust. The disease had existed for a year and a half and was progressive in its nature. It began as a pink spot below the right naris and was free from pain. At the end of three months it was perceptibly elevated and developed into a pronounced ridge which gradually extended to the left side of the nose. The lesion was quite superficial, but the underlying tissue was infiltrated and very hard. Upon the right side of the nose were two sharply defined ridges measuring about an inch and three-quarters in length, having between them a small area of sound skin. Upon the left side of the nose was a single ridge having a uniform width of nearly half an inch. The right ala was uniformly thickened, causing a narrowing of the opening of the nostril. The result of the bacteriological examination was still in doubt at the time of the report.

A Non-irritating Ophthalmic Ointment.

W. Allan Jamieson (*Brit. Journ. of Derm.*, April, 1896), after alluding to the difficulty of finding a perfectly bland ointment for the treatment of diseases of the eyelids, states he has found one of Unna's cold cream ointments, a little modified in proportions, to be an ideal ophthalmic salve. It is compounded as follows: Lanolin (Liebreich), ʒiij; ol. amygdalæ, aq. dest., āā ʒss.—M. To this may be added with advantage 2 grains of boric acid if the salve is intended to be kept for a long period. Patients express themselves pleased with the grateful sense of coolness, without smarting or irritation, which it imparts.

Two Cases of Pruritus Cured by Antipyrine.

F. Arnstein and Atoniak (*Jour. des Mal. Cut. et Syph.*, Fév. 1896) report two chronic cases in which this drug acted happily. The first case occurred in a woman, twenty-eight years of age, the disease beginning upon the vulva, from which region it progressively extended over the thighs, abdomen, back, neck, chest, and upper extremities. There were no alterations in the texture of the skin. In the course of the fourth month of the disease antipyrine was taken twice daily, and at the end of ten days the pruritus had completely disappeared. The second case occurred in a woman aged sixty-six years, the subject of senile pruritus. Under moderate doses four times daily the disease entirely disappeared in two weeks.

The Treatment of Trichophytic Onychomycosis.

At the séance of January 9, 1896, of the Société Française de Dermatologie et de Syphiligraphie (*Annales de Dermatologie et de Syphiligraphie*, 1896, No. 1) Sabouraud presented a patient in whom all the nails of the right hand were invaded by the trichophyton. The treatment consisted in the application of a permanent, moist iodated dressing, prepared according to the following formula: Metallic iodine, 1 gramme; iodide of potassium, 2 grammes; distilled water, 1 litre. A pad of absorbent cotton wet with this solution was applied to each finger, evaporation being prevented by means of rubber finger-stalls. After four months of treatment the nails appeared divided by a transverse line separating the old part of the nail-diseased from the new-sound part, showing that the growth of the fungus was arrested by the solution. The author believes this method of treatment superior to other methods.

Bacteriological Investigation of a Case of Trichorrhexis Nodosa Barbæ.

Essen (*Archiv f. Dermatologie und Syphilis*, 1895, Bd. xxxiii. Heft 3) gives the following as the result of the investigation of a case of trichorrhexis nodosa of the beard:

1. A small, well-characterized bacillus was found almost constantly in all the diseased hairs.

2. This bacillus differed essentially from that described by Hodara as the "bacillus multiformis trichorrhexidis," and has not yet been described.

3. Upon normal hairs and in three cases of trichorrhexis capillitii this bacillus was not found.

4. Inoculations practised with pure cultures of this bacillus upon normal hairs of the beard lead to the development of a disease-picture identical with the original case.

5. Therefore it is in the highest degree probable that the bacillus in question can produce trichorrhexis nodosa; but the final proof will only be afforded when the vitality of the inoculated bacillus in the secondarily produced trichorrhexis has been demonstrated.

Effect of Carbolic Acid on Healthy Skin.

A. Frickenhaus (*Monatsh. für prak. Derm.*, Bd. xxii. No. 7) concludes, as a result of experimentation upon the human skin and that of rabbits, that liquefied carbolic acid produces upon normal human skin an eschar, which involves the epidermis, but hardly the true skin, extending down only to the border of the papillæ. The eschar occurs in the form of a dry gangrene like that of mummification, and leaves only a slightly or a not at all pigmented scar; the former when it occurs disappearing entirely in about three months. The process of healing is especially prompt upon hairy parts of the body. In practice carbolic acid should not be employed in cases in which it is desired to act upon the true skin. General intoxication is to be guarded against by not applying the agent to larger areas than a half to one dollar at one sitting. It is desirable to bring about healing by second rather than first intention, in order that a better scar may result, especially on the face.

OTOLOGY.

UNDER THE CHARGE OF

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Otitis Media in Infants.

Walb (*Archiv. f. Ohrenh.*, vol. xxxix.) has been making observations upon infants, in the children's clinic at Bonn, with a view to establishing a system of prophylaxis and form of treatment of suppuration of the middle ear in very young subjects. In order to promote the escape of pus from the ear he recommends inflation of the naso-pharynx. Regarding prophylaxis, in view of the danger of infection of the ear from the nose, he recommends "cleansing the nose as soon as possible after birth. This may be done by inflation, *one nostril being left open*. If infection of the ear is already suspected, inflation should be performed with both nostrils closed."

Respecting these very injudicious suggestions, Zaufal (*loc. cit.*) wisely remarked that "as the passages of the child from intrauterine to extra-

uterine life is a normal physiological process, one may venture to suppose that nature has devised plans whereby this transition may ensue without injury to the child. If, therefore, larger quantities of mucus, etc., are then found in the nose of the child, it is fair to suppose that they will be removed by the establishment of respiration and the movements of sucking and swallowing, without the necessity of artificial help. Under ordinary circumstances, then, there would be no necessity of resorting to inflations. Furthermore, such inflations, even when practised with one open nostril and a small air-bag, are not without danger, because the capacious opening in the child's Eustachian tube favors the entrance of the aforesaid masses of mucus, etc., into the middle ear, which would produce just what it is desirable to avoid."

Acute Otitis Media.

Beneficial results of careful antiseptic treatment of acute otitis media, after either spontaneous rupture or paracentesis of the membrana tympani, by means of a solution of carbolic acid in water (2 per cent.), or, still better, by means of drainage of the auditory canal by gentle packing with iodoform gauze, are shown by MacCuen Smith (*International Clinic*, 1895, vol. ii.). Dench (*Archives of Pediatrics*, 1895) advises the paracentesis of the membrana when leeches and dry heat fail; and Pritchard (*British Medical Journal*, 1895) considers syringing the acutely inflamed and running ear as dangerous. He drains with cyanide gauze and avoids syringing. These conservative methods are safe and generally efficient, while other methods, which include syringing, mopping, instillations of peroxide of hydrogen, and insufflation of boric acid, are provocative of secondary infection and mastoiditis.

Purulent Leptomeningitis from Acute Otitis Media.

Joel (*Archiv f. Ohrenh.*, vol. xxxix.) observed purulent leptomeningitis following acute otitis media with mastoiditis after measles in a child three years old. The post-mortem examination revealed no caries on the inner surface of the petrous bone, but pus was found filling the porus acusticus internus, and it was suggested that this pus may have found its way to this point from the middle ear through the facial canal.

Brieger (*Ibid.*) has suggested puncturing the cerebro-spinal space in order to decide whether, in addition to a brain-abscess, there is present also a complicating meningitis. The result is sometimes negative, though a meningitis be present. However, even in such cases Brieger concludes the surgeon may sooner decide to operate.

Otitic Facial Paralysis.

Facial paralysis of the so-called rheumatic variety generally will be found at least associated with acute otitis media, if not caused by it, as shown by Gelle (*Annales des mal. de l'Oreille*, etc., 1890), and Lannois (*Annales des mal. de l'Oreille*, etc., 1894), and recently illustrated by Bundy (*Philadelphia Polyclinic*, 1895).

Voss (*Archiv f. Ohrenh.*, vol. xxxix.) claims to have relieved facial paralysis resulting from acute otitis media in a child, and which had lasted three

months after all ear-symptoms had subsided, by opening the mastoid and cleaning out the hyperæmic, spongy tissue from the antrum. All other treatment had failed to give relief.

Hemorrhagic Exudation in the Middle Ear.

Haug (*Archiv f. Ohrenheilkunde*, vol. xxxix.) reports the occurrence of hemorrhagic exudation in the drum-cavity as well as a simultaneous hemorrhagic otitis externa from irritation from a pulpitis in a molar tooth. In such a case the otitis may have been produced by putting some form of irritant into the external ear to cure toothache, a popular method in Germany.

Cartilaginous Exostosis in the External Ear.

J. Orne Green records the observation and removal of a cartilaginous exostosis in and from the meatus. The growth had its attachment by an osseous pedicle to the attic of the tympanum. After detachment of the auricle from the bony meatus the new growth was seized by toothed forceps and extracted. Under antiseptic treatment of the ear (bichloride solution 1 : 5000) suppuration ceased in the course of a month, and in three months from the time of the operation the ear had became normal in all respects.—*Transactions of the American Otological Society*, vol. vi. part ii.

Earache from Dental Irritation.

Barclay calls attention to earache from dental irritation in large children and adults. In all cases of earache in which the tissues of the ear appear normal oral irritation should be sought for and removed if found.—*Courier of Medicine*, September, 1895.

Acute Mastoiditis following Acute Otitis Media.

Holt reports two cases of acute mastoiditis following, in the course of four or five weeks, acute otitis media (*Transactions of American Otological Society*, vol. vi. part ii). Both cases resulted fatally from intracranial lesions. We can but repeat that acute mastoiditis in such instances must be regarded as an entirely unnecessary result of acute otitis media. The only possible explanation of its occurrence, which seems to be on the increase, lies in the septic retention in the drum and secondary infection of the antrum and mastoid, induced by excessive and irritant treatment of the ear and nasopharynx, generally carried out before the aurist is consulted.

Circumscribed Periphlebitis of the Jugular due to Mastoiditis.

J. Orne Green (*Transactions American Otological Society*, vol. vi. part ii.) reports the occurrence of circumscribed periphlebitis of the jugular due to mastoiditis in a man of twenty-eight. The patient had been attacked with acute otitis media in the right ear five weeks before he was examined by Green, who thinks "the series of pathological processes were as follows: Suppuration of the tympanum and mastoiditis, periphlebitis (circumscribed

pachymeningitis externa) of the lateral sinus, an extension of the periphlebitis down the jugular vein, and finally circumscribed suppuration within the sheath of the vein, at the seat of the operation (performed by Dr. George W. Gay), some three inches below the ear."

Before the operation for relief of the periphlebitis, by which a little pus was found in the sheath of the vein, Dr. Green had opened the mastoid antrum without relief. After the operation on the vein the patient rapidly recovered.

It is not stated in the history of this case what had been done for the ear by the patient, his friends, or his physician, in the five weeks before he was examined by Dr. Green. Hence there exists a most important hiatus in our knowledge of the probable etiology of the acute mastoiditis and its periphlebitic sequelæ. We feel safe in placing it, however, in the category of cases artificially produced by excessive, irritant, and septic treatment of the primary acute otitis media.

Prevention of Mastoid Disease.

Under the above title, Burnett (*Transactions of the American Otological Society*, vol. vi. part ii.) maintains that acute mastoiditis is an entirely unnecessary result of acute otitis media, and never occurs except as a consequence of improper treatment of the primary acute inflammation of the middle ear and the nasopharynx, usually inflamed at the same time. The treatment of an acute otitis, he claims, should be largely negative, especially after discharge sets in, as the result of either paracentesis or spontaneous rupture of the membrana tympani.

This view is based on the fact that the acute otitis media is due to the presence of a pathogenic germ, generally the streptococcus, in the middle ear, whither it has gone from the nasopharynx.[1] Inflation of the nasopharynx under such conditions tends not only to drive more such germs into the middle ear, but the germs already there into the mastoid cavity. Inflation of the nasopharynx also tends to force pathogenic germs into the unaffected ear, if there be such, and set up inflammation there.

To relieve earache in acute otitis media a few drops, warmed, of a solution of carbolic acid (1–40) may be applied to the canal and membrana tympani if it can be borne. Dry heat over and about the auricle, however, is often sufficient to give relief, and *it never irritates*. Leeching, counter-irritation, and all forms of anodyne-drops are not only useless, but further irritate, cause artificial inflammation in the canal and membrana, and *mask* the true state of affairs. If pain in the ear continues and spontaneous rupture of the drum-membrane does not occur in from six to twelve hours, paracentesis of the membrana tympani should be performed. This should be preceded by the instillation of a few drops of an antiseptic solution into the auditory canal. Immediately after paracentesis or spontaneous rupture of the membrana *nothing* should be syringed, mopped, swabbed, or blown into the ear.

The auditory meatus should be stopped with antiseptic gauze—preferably iodoform- or carbolic-acid gauze—and let alone for twenty-four hours. The discharge which now sets in is beneficent and should be favored by the

[1] Gradenigo and Pes, as reported in this Journal, July, 1895.

drainage obtainable with the gauze, as just stated. If any other procedure is adopted, staphylococci, ever present on the skin of all of us, are likely to get into the auditory canal, upon the membrana, through the perforations, and into the middle ear and mastoid cavities. Secondary infection is thus set up, chronicity is established, and the physician in charge of the case is confronted with the direful sequelæ named above. The occurrence of acute mastoiditis as a sequel of acute otitis media has been especially frequent since the introduction of hydrogen dinoxide into aural surgery. This can be explained by the expansive action of the drug named, which forces pus from the middle ear into the mastoid cavities.

BARCLAY (*Med. Review*, February 22, 1896) discards the use of *any form* of inflation in acute otitis media, as tending to increase the inflammation, and he urges all general practitioners not to permit its use among their patients.

BARR (*Internat. Otol. Congress; Annales des Mal. de l'Oreille*, etc., January, 1896) records a case of acute otitis media, complicated with mastoiditis, following the surgical removal of adenoids from the nasopharynx. He thinks this untoward sequel was largely due to the irrigations of the nasopharynx carried out both before and after the operation on the nose. Barr and Brieger (*loc. cit.*) both consider such irrigation unadvisable. In fact, this case reported by Barr furnishes another example of the danger to the ear attending violent measures of any kind in the nasopharynx. Much that is done there does no good to the nasopharynx, while harm accrues from it to the middle-ear.

OBSTETRICS.

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CÆSAREAN SECTION AFTER THE DELIVERY OF A MONSTROSITY.

In the *Centralblatt für Gynäkologie*, 1896, No. 12, ESSER reports the case of a multipara whose labor came on in the sixth month of pregnancy, and who failed to deliver herself. The head of the fœtus was presenting, and an effort to deliver with forceps resulted in separating the head from the body. The fœtus was greatly disorganized, and after the removal of the head it was impossible to make sufficient traction upon the arms to deliver the trunk. The body of the fœtus contained a tumor, of a semi-fluid nature, sufficiently great to prevent delivery through the pelvis. Fearing that the contents of this tumor might be infectious, and that if it were emptied by embryotomy it would infect the uterus, Esser delivered the patient by the Sänger-Cæsarean operation. The mother made a good recovery. An examination

of the fœtal body showed the trunk greatly distended with a clear fluid, while the limbs were but rudimentary and were very small.

Six Symphysiotomies.

In the *Annales de Gynékologie*, March, 1896, Lepage reports six symphysiotomies at the Maternity of the Hospital St. Louis, Paris.

The first was in the case of a woman, aged thirty-six years, whose first pregnancy ended spontaneously at term. She was found to have a small antero-posterior diameter, measuring between 8 and 9 cm. Labor delayed, although the head presented and the heart-sounds remained good. The membranes were ruptured, but still the head did not descend. Symphysiotomy was performed, and the child delivered by forceps. Both mother and child made a good recovery.

His second patient was aged thirty-six years, and had been previously four times pregnant. She had lost her children after difficult deliveries with forceps. The membranes had ruptured in the present labor. As descent did not occur, the forceps was tried and abandoned. Symphysiotomy was done, and the child delivered with forceps. A tear occurred at the right side of the vestibule which connected the vagina with the symphysiotomy wound. This was closed with catgut. This patient required catheterization, but otherwise did well.

His third patient was in her second pregnancy, her first having been terminated by de Ribes by three applications of the forceps. As labor failed to progress, symphysiotomy was performed, and during the operation there was free hemorrhage, which was controlled by pressure. The child was expelled spontaneously. This patient made a good recovery.

The fourth case was that of a woman who had borne four children, two of whom had perished by difficult labor. In her present labor her physicians in attendance before she came to the hospital had made five attempts with forceps to extract the child. The pelvic floor and vagina were considerably bruised by the forceps. The patient's urine contained blood. Her temperature was slightly elevated, and a considerable tumor was upon the fœtal scalp. In view of the fact that the patient had borne children previously, an attempt was made to extract the child by the prehensile lever of Farabeuf; but this attempt failed, and symphysiotomy was necessary. Considerable hemorrhage occurred when the symphysis was opened. The extraction with forceps was difficult even after symphysiotomy, and a further examination disclosed the fact that the head was in brow-presentation. The child, however, was delivered, and suffered from facial paralysis of the left side. Its head showed the marks made by forceps-applications. A transverse laceration of the anterior vaginal wall took place near the clitoris; this was closed with catgut. The tissues about the urethra were very much bruised by attempts at delivery. Incontinence of urine developed, the patient passing urine into the vagina. The patient was subsequently examined by injecting a colored liquid into the bladder through a sound, when a vesico-uterine fistula was found connecting the bladder and the cervix. The patient complained of pain in the groin, but had no fever. The bladder was douched with boric acid, the general health of the patient remaining good. The

fistula finally closed, and the patient made a good recovery. The child's facial paralysis had greatly diminished.

The Relations of Pregnancy to Surgery.

This forms the topic of an address by Mayo Robson (*British Medical Journal*, 1896, No. 1841). As a general surgeon he has had occasion to operate eleven times upon pregnant patients. One of his cases was that of a myoma of the cervix, growing from the anterior lip, and occasioning an offensive and bloody vaginal discharge. The tumor was enucleated, the patient making a good recovery and going to term, having finally a spontaneous labor. He also operated for cancer of the breast in the third month of pregnancy, completely removing the breast and axillary glands. The patient went to full term, and a year afterward had no return of the disease. He reports an ovariotomy in the tenth week of pregnancy, with the removal of a rapidly growing tumor which was adherent to the posterior wall of the uterus. This was found to originate from an ovarian tumor which had ruptured, its solid portion invading the surrounding tissues. This patient's pregnancy was not interrupted, and she made a good recovery.

He also operated upon a strangulated femoral hernia in the third month of pregnancy with complete success. Stercoraceous vomiting, which was present, entirely ceased, but the nausea of pregnancy continued.

In another case an ovarian tumor in a patient two months pregnant had rotated, twisting its pedicle. Peritonitis was beginning when operation was performed. This patient also recovered, and the pregnancy continued.

He also reports a case of very aggravated hemorrhoids in a patient four months pregnant. The sphincter was dilated and the hemorrhoids removed by cautery without the interruption of pregnancy, the patient making a good recovery.

Another case of cancer of the breast and axillary glands at the seventh month of pregnancy was operated upon by radical removal of the breast and glands. The result was entirely successful.

A patient in the eighth month of pregnancy sustained a compound comminuted fracture of the leg. Pregnancy was not interrupted, and the bone knit with a good result.

A patient six months pregnant was operated upon for gall-stones by cholecystotomy, and nine gall-stones were removed. The wound healed by first intention, but on the eighth day the patient became much excited from a noisy inmate of the ward, and premature labor occurred, from which she made a good recovery. An operation for hemorrhoids and fissure of the rectum was performed during the second month of pregnancy, with a successful result.

His list closes with the removal of an ovarian tumor in the third month of pregnancy, the result being entirely satisfactory.

This series of cases demonstrates the fact that pregnancy does not render impossible surgical procedures, if such be demanded to cure disease.

Robson also calls attention to cases of abdominal tumors sent to a surgeon for operation, often under a mistaken diagnosis. He has repeatedly found pregnancy to be the cause of the tumor. He is accustomed to examine every

case of pelvic enlargement in women with the idea that pregnancy may be present. He also calls attention to the importance of early operation in ectopic gestation, and reports two cases in which bleeding was still going on when the diagnosis was made, both of these patients making good recoveries.

A Case of Sacculated Dilatation of the Umbilical Vein.

In the *Annali di Ostetricia e Ginecologia*, 1896, No. 2, Vicarelli reports a rare case in which a sacculated dilatation of the umbilical vein, 9 cm. long and 5 broad, was found near the placenta; no adequate reason for this abnormality could be discovered.

Laparotomy upon a Newborn Child for Umbilical Hernia.

In the *Centralblatt für Gynäkologie*, 1896, No. 13, Marjautschick reports the case of a newborn child in the clinic at Kiew, who was found to have an umbilical hernia as large as a good-sized apple. On the day following birth the child was anæsthetized by chloroform, and under antiseptic precautions the abdomen was opened, the amnion which had become hardened removed, and the umbilical vessels ligated and cut. The viscera were carried back into the abdomen, the borders of the hernial opening were freshened, and the peritoneum and abdominal wall sewn together. The operation consumed fifty-five minutes, and one drachm of chloroform was given. The child perished five days afterward. The writer draws the following conclusions: Where the defect in the abdominal wall is so great that there is danger of the stitches cutting or parting, or it is impossible to bring the edges together without operation, it should certainly be undertaken. With children who are strong enough to live, the radical operation is the better. When operation does not seem justifiable, the child must wear an antiseptic pad.

When the gap in the abdominal wall is small, it is better to treat the hernial tumor by ligation without operation. This is the wiser course also when it is impossible to reduce the hernia. The post-mortem examination upon the child showed the wound of operation to be firmly united. In several portions of the abdomen fibrin was found, in connection with a slightly purulent exudate.

Supravaginal Hysterectomy during Pregnancy, for Intestinal Obstruction.

In the *Medical Press and Circular*, 1896, No. 2964, Elder describes the case of a patient who had suffered from constipation before her marriage. After she became pregnant her constipation was aggravated. When four months advanced in pregnancy she was taken with violent nausea, lasting for three days and nights, while for four days afterward it was almost impossible for her to take food. The matter vomited was at first bilious, and then thick and dirty-looking. Repeated injections failed to move the bowels until the seventh day, when a small movement occurred. The bowels moved afterward very rarely in spite of medicine. The patient lost flesh and became very sallow. On examining the abdomen a tumor extending from the

pelvis to within an inch of the umbilicus could be felt with two portions extending upward on each side, irregular in shape, and composed of nodules. By vaginal examination a large, solid, pelvic mass was felt pressing the uterus to the left. Hysterectomy was performed by ligating the broad ligaments and removing the tubes and ovaries, when, on lifting up the uterus, a coil of small intestine was found firmly attached to its upper surface. The adhesions were freed and tied. The uterus was found to be the seat of a fibroid tumor; an elastic ligature was placed around the cervix, a circular incision made, and the tumor removed. The uterine arteries were tied, the edges of the stump sutured, and it was fixed in the lower angle of the wound. A drainage-tube was passed into Douglas's cul-de-sac. Some eight hours after operation, hemorrhage from the stump occurred, which was checked by pressure and solid perchloride of iron. The patient made a good recovery. The specimen was found a myomatous uterus containing a fœtus eight inches long.

The Present Method of Teaching Obstetrics in London.

In the *Practitioner*, 1896, No. 4, Herman very justly considers the present method of teaching obstetrics in London as excessively faulty. This method consists in theoretical lectures given by a professor of obstetrics, while the students are sent into out-patient practice, where they are supposed to summon assistance from junior instructors, if complications arise. Herman rightly draws attention to the fact that good obstetric teaching is that which shows the students how to prevent complications in labor and disease afterward. The General Medical Council is about passing rules governing this matter, when it is evident that the present system can no longer continue. Herman states that obstetrics should be taught in lying-in hospitals, as medicine and surgery are taught in general hospitals, the teaching being clinical in character. Students are admitted to but one obstetric hospital in London. Herman is very positive in his belief that students should not be allowed, unattended by a qualified practitioner, to conduct cases of labor in out-patient practice.

The custom, so common in America, of sending under-graduates to attend labor-cases, has nothing to commend it. In many American cities it is illegal, and the student or the college is liable to prosecution for such an act. In New York City the best out-patient work in obstetrics is done by the assistance, not only of the student, but of competent instructors with the student. No physician or surgeon sends under-graduate students into the houses of out-patients to treat cases of illness, or to perform even minor operations. It is to be hoped that those who persist in the practice will be compelled to abandon it.

Infantile Syphilis.

In the *Lancet*, 1896, No. 3789, Coutts, in the Hunterian lectures upon this subject, reviews the question of transmission of syphilis, and also what is known as syphilis by conception. He draws attention to the remarkable persistence of the power of syphilitic infection transmitted by the father to the child. Cases are reported in which transmission from parent to infant

took place twenty years after the primary infection. He finds that maternal syphilis is more injurious to the infant than is paternal. He does not personally believe in what is known by the French as "syphilis by conception." He does not believe, however, that a mother may absorb from a syphilitic fœtus an antitoxin of syphilis which may render her practically immune to the disease.

A New Indication for Hysterectomy during Pregnancy.

In the *Berliner klinische Wochenschrift*, 1896, No. 13, Abel reports the case of a multipara who was at the end of her second pregnancy. The amniotic liquid had escaped thirty-six hours before, and the patient had had strong pains which had gradually grown weak. On examination the external os could not be found. It was finally possible to ascertain the position of the cervix, in which it was hard to admit one finger. The head was presenting, and each pain forced it downward and backward against the vertebra. It did not, however, descend, and labor was evidently impossible. Five hours later the patient was taken to a hospital. Upon opening the abdomen the uterus was found adherent to the anterior abdominal wall. The womb was also attached to the anterior wall by a considerable area of adhesions. The uterus was opened, and the child extracted. The uterus was amputated. The patient made a good recovery.

Retention of a Dead Fœtus of Three Months, with Induction of Labor by Salicylate of Soda.

In the *Archives de Gynécologie et de Tocologie*, 1896, No. 3, Vinay reports the case of a patient who suffered from ill-feeling, loss of appetite, and diarrhœa, with attacks of icterus. An examination of the uterus showed that it reached to the umbilicus, and that there were no signs that the fœtus was living. To empty the uterus the patient was given eighty grains of salicylate of sodium daily for four days. At the end of the fourth day labor came on, and the patient was delivered spontaneously.

The Treatment of Puerperal Infection by Injections of Serum.

Barr and Tissier report (*L'Obstétrique*, 1896, No. 2) a number of cases of septic infection treated by injections of serum.

The first patient was aged twenty-one years, a primipara, who was taken with typical chill and fever the third day after delivery. Repeated injections of bichloride of mercury solution 1 : 6000, were made, and curetting was done twice without improvement. Accordingly 100 grammes of serum were injected, followed on the next day by 120. The patient's urine contained no albumin and gave no evidence of an increase in its toxic properties. The third injection of 120 grammes was made, and a fourth, fifth, and sixth in succession. Two hundred grammes were given three times, and this was again repeated because of no improvement. Twenty c.c. of rabbit-serum from an immunized animal were also used, and this injection was repeated in slightly less quantity. The patient, however, died, and the

autopsy showed an abscess near the right kidney, with the veins about the uterus and ovaries infected. No bacteriological examination was made in the case.

The second case reported is that of a multipara who had eclampsia. The patient was very pale, and her urine contained an abundance of albumin. A portion of the placenta was found retained in the os. The uterus was explored with the hand, and a large mass of membranes, slightly fetid, was removed. The patient was in a very weak condition following the removal of the membranes. Fever and foul lochial discharge followed, which were treated by injections of iodine. Serum was also used by hypodermic injection, that being selected which was supposed to be efficient to immunize an animal of the same weight as the patient. A few days afterward inoculations were made from the vagina and cervix. Those taken from the vagina showed bacillus of the colon and some colonies of streptococci. The pus coming from the uterus contained very few streptococci, but an abundance of the colon-bacillus. Douches were suspended, and the patient treated by injections of serum. As the patient grew worse, the injections were resumed, and ice placed upon the abdomen. An examination made of the exudate in the vagina showed many streptococci present. Repeated intrauterine douches were given, and injections of serum were repeated. Some ten days afterward she had a sudden rise of temperature without apparent cause. Her elimination was greatly improved, and she finally made a recovery.

Case three was that of a patient delivered by a midwife and brought into the hospital in a septic condition. Portions of decomposed placenta were found in the uterus, and beginning pneumonia was present in the lung. Streptococci were found in the lochia from the vagina. Repeated injections of serum were made, resulting in a very slight improvement. The patient finally succumbed to prolonged high temperature. Upon autopsy pure cultures of streptococci were obtained from the peritoneal cavity. The ovaries and uterus showed no signs of infection.

Case four was that of a multipara under the care of a midwife who had ruptured the membranes and given ergot to hasten labor. The patient was brought in during labor, which terminated in the birth of a dead child. Very fetid lochia came from the uterus, the child being putrid. The patient had fever, foul lochia, in which were found cultures of the bacillus coli communis. Repeated examination of the discharge of the uterus showed the presence of streptococci. The patient's illness ended fatally.

Case five was that of a syphilitic woman who bore a macerated fœtus; who had fever, but recovered under the use of serum-injections.

The sixth case was that of a multigravida, brought in in labor, which terminated with natural delivery. On the fourth day symptoms of sepsis appeared, and various germs were found in the lochia. The patient was subsequently taken with pleurisy, from which she made a recovery. She received several injections of serum from horses' blood.

Case seven was that of a premature labor in a woman who had hip-joint disease. Her delivery was followed by fever, and infective germs were found in the lochia. Dilatation was hastened by artificial means, and a dead child was delivered with forceps. This patient also received several injections of horse's serum The uterus was curetted and drained with iodoform gauze.

The patient died, and pus was found about the neck of the uterus beneath the peritoneum. It contained an abundance of streptococci.

Case eight was one which recovered under this treatment. She had a flat pelvis, and her child was delivered by version, being stillborn. She was infected by streptococci, and was treated with horse's serum.

Case nine had been treated by a midwife, and was brought to the hospital in a septic condition. She made a recovery under serum-injections and intrauterine douches.

The tenth patient was delivered at seven months by a rapid and natural labor. She became infected with streptococci and finally perished. Evidences of infection were found in the pleura, in the peritoneum, in the liver and kidneys.

The eleventh patient had been delivered by a midwife and was brought to the hospital septic. She lived but a day or two, dying of peritonitis uninfluenced by injections of serum.

The twelfth patient was a multipara brought into the hospital with a dead child, which was delivered by craniotomy. She became infected, but made a prompt recovery, although streptococci and pneumococci were found in the lochia. She was treated with horse's serum three times.

The last case reported is that of a multipara whose membranes had ruptured prematurely, an arm having prolapsed and the child having died. The head was found partially presenting, and the patient was delivered with forceps. This patient had a cellulitis on the left side, and an abundance of albumin in the urine. She finally perished, the autopsy showing a small abscess at the side of the uterus. Streptococci and pus were found in the thrombi in the uterine vessels.

GYNECOLOGY.

UNDER THE CHARGE OF

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Fixation of the Prolapsed Ovary.

Saenger (*Centralblatt für Gynäkologie*, 1896, No. 9) reports two cases in which he practised "pelvic fixation" of the ovaries. With the patient in Trendelenburg's posture, ventro-fixation of the retro-displaced uterus was first practised. The prolapsed ovaries were attached to the pelvic brim in one case by passing two fine silk sutures through each mesosalpinx near the ampulla of the tube, and then through the parietal peritoneum just in front of the attachment of the ovarian ligament. In the other case after ventro-fixation the ovaries (previously freed from slight adhesions) were drawn upward, ignipuncture of several follicular cysts was performed, and the organs were then attached to the parietal peritoneum as before, except that

the sutures were introduced around the infundibulo-pelvic ligament just behind the fimbria ovarica. In both instances all former painful symptoms were relieved, and the ovaries remained permanently in normal position. In the second case the patient had conceived, and was six months pregnant.

The operation is comparable with intraperitoneal shortening of the round ligaments, and, like the latter procedure, aims at restoring the displaced organs to their normal position without impairing their natural mobility. It is, of course, impossible to accomplish this fixation of prolapsed ovaries except by cœliotomy. It is intended merely as a supplement to other conservative work upon the uterus and ovaries.

New Method of Vaginal Fixation.

Wertheim (*Centrablatt für Gynäkologie*, 1896, No. 10) calls attention to the serious complications of pregnancy and labor after vagino-fixations, where the normal enlargement of the uterus is interfered with. The same disturbances have been noted after ventro-fixation, though spontaneous delivery at full term occurred in about 85 per cent. of the cases collected by Miländer. The latter notes, however, that these were absent in all cases in which the round or broad ligaments were shortened or attached to the abdominal wall. It occurred to the writer that the evil results of vagino-fixation might be avoided by fastening the round ligaments to the anterior vaginal wall. The steps of the operation are as follows: The vesico-uterine pouch is incised transversely as widely as possible. The uterus is anteverted, the round ligaments exposed and a loop of each is pulled down, the cervix being drawn backward and the forefinger passed over the fundus. Counter-pressure above the symphysis assists in the anteversion and renders it unnecessary to seize the fundus with a volsella. The loops of ligaments can be drawn down and held with ligatures without bringing the uterus into the vagina. The ligaments can be secured intraperitoneally, when each loop is sutured to the outer angle of the vesico-uterine fold of peritoneum as the wound is closed. More permanent fixation, however, is obtained by attaching the ligaments to the corresponding angles of the vaginal wound, after which the peritoneum and vagina are closed separately. The immediate results of the operation are excellent, the uterus being in normal position, while the usual dislocation of the bladder is absent, since the fundus uteri does not rest upon it in such a way as to prevent its expansion. There is no danger of injuring the ureters. Since no cases of pregnancy after this operation have yet been reported, the crucial test of its value is wanting, but it seems fair to infer that the disturbances following Mackenrodt's method will be absent.

It is important to note that the ligament should not be seized directly at its origin, but at a point an inch beyond it. It is possible to draw out from three to five and one-half inches of the ligament, though an inch is sufficient in vagino-fixation. The writer further suggests that shortening of the round ligaments can also be readily performed in the same way by pulling them down from three to five inches and attaching the loops thus formed to their uterine origins. The uterus is thus elevated, as well as anteverted, precisely the same as in Alexander's operation. The vesico-uterine pouch is then closed, the bladder is re-attached to the cervix, and the vaginal wound is

sutured. This procedure presents some advantages over vaginal fixation of the round ligaments, since the bladder remains in its normal position and relations, the ligaments can stretch in a natural way during pregnancy, and the uterus is not only anteverted, but is elevated in the pelvis. As compared with Alexander's operation, a single wound is made instead of two, there is no external scar, the ligaments are seen at their origin, where they can be easily identified, and the vaginal method is equally applicable to cases of retroflexion with fixation.

Air-embolism during Myomectomy.

Biermer (*Ibid.*) reports the following case, which he regards as unique: During the removal of a myoma of medium size from the anterior aspect of the uterus a sudden hissing sound was heard as the growth was twisted out of its bed, and the cavity was filled with bloody foam. Less than two minutes afterward the patient ceased to breathe, her pulse became imperceptible, and although efforts at resuscitation were continued for an hour she expired. The diagnosis of chloroform-asphyxia was made, but at the autopsy the right ventricle was found to be distended with large air-bubbles.

Gonorrhœa in Women from a Medico-legal Standpoint.

Neisser (*Centralblatt für Gynäkologie*, 1896, No. 14) discusses this important question with especial reference to the importance of the diagnosis, which, he affirms, cannot be positively made without the aid of the microscope. A secretion may be present which bears an exact resemblance, macroscopically, to gonorrhœal pus, but contains no cocci, or, in fact, any bacteria whatever.

Moreover, it is impossible to determine the time at which infection occurred, since its course differs so widely in different subjects. When the cervical canal is affected, but not the urethra, symptoms may be absent. The writer denies the truth of the statement that obscure acute gonorrhœal infection in the female may cause a chronic discharge in the male; the gonococci always possess the same virulence, and when they come in contact with healthy mucous membrane produce an acute inflammation. This explains the violent gonorrhœal attacks in newly married women, whose husbands regard themselves as entirely cured, and also the similar acute infection of men after intercourse with females whose physicians had discharged them as free from disease. In both instances the secretion is found to contain a few scattered cocci, which are only found after a long search. In the chronic cases the characteristic appearance of the gonococci within cells is often wanting, and the culture-test is frequently unsatisfactory. In short, the microscopical diagnosis is often exceedingly difficult. Still, this is the only one which should be admitted as positive in a court of law.

Simon (*Revue Méd. de l'Est; Annales des mal des Organes Gén-urinaires*, 1896, No. 4), after reviewing the opinions of various authors with regard to the importance from a medico-legal standpoint of the presence of gonococci in suspected vaginal discharges, the following interesting case is cited: A man, aged thirty-seven years, was accused of having committed rape upon a

little girl, five years of age, and of having infected her with gonorrhœa An examination of the greenish pus which escaped from her vagina showed that it contained Neisser's cocci. The accused denied that he had had urethritis or any venereal trouble since an attack of clap fifteen years before, which had been promptly cured. Careful and repeated examinations of his urethra showed an entire absence of any abnormal secretion. A bacteriological examination of the urinary sediment demonstrated the presence of numerous epithelial cells containing bodies which somewhat resembled gonococci, but when subjected to staining by Gram's method failed to respond to the ordinary test. Under these circumstances it was impossible for the expert to submit a positive opinion. Hence the inference that when the question of the specific nature of an old urethral discharge is to be decided, too much reliance cannot be placed on the bacteriological evidence. Even when cocci are demonstrated in the vaginal secretion the origin of the infection, whether direct or accidental, may remain in doubt.

Exploratory Cœliotomy.

Tilmann (*Deutsche med. Wochenschrift*, 1895, No. 49) calls attention to the fact that exploratory section is not entirely devoid of danger even with the exercise of the most rigid asepsis and careful suture of the abdominal wound. It should be resorted to only after all other means of diagnosis have been exhausted; in short, future advances in the diagnosis of abdominal affection should be made through the more careful study of symptoms and signs rather than by direct palpation through an incision. It is true that certain neoplasms are favorably affected by merely opening the peritoneal cavity (notably tubercular deposits), but this is only occasionally true of malignant disease.

New Operation for Prolapsus Uteri.

Jacobs (*Centralblatt für Gynäkologie*, 1896, No. 15) describes the following operation, which he calls *callopexia ligamentaire*. It is applicable only in cases of women who have passed the climacteric and have been weakened by repeated pregnancies. After thorough disinfection of the vagina and curettage, the vagina is tamponed with gauze, and the abdomen is opened with the patient in Trendelenburg's posture. The uterus is amputated in the usual manner at a point just above the os internum, a deep wedge-shaped excision being practised, with anterior and posterior flaps. The cervical canal is cauterized with chloride of zinc, and the stump is sutured and covered with peritoneum in the ordinary way. Then (and this is the important step in the operation) the stump is elevated and attached to the upper stump of the broad ligament on either side, with silk sutures. In this way the prolapsed vaginal walls are drawn well upward. If the condition of the uterus is such that total extirpation seems to be preferable, the edge of the vagina can be sutured in a similar manner to the stumps of the ligaments.

[The criticism of this operation is that which we have already offered in the case of similar ingenious procedures advocated by our French *confrères; i. e.*, it is rather heroic treatment of a condition not in itself serious or dan-

gerous to life. The trend of opinion in this country is decidedly against the indiscriminate removal of the uterus except for actual disease of that organ. —H. C. C.]

Urethral Calculi in the Female.

Quenu and Pasteau (*Annales des Maladies des Organes Genito-urinaires*, 1896, No. 4) conclude a lengthy article on this subject as follows: 1. There is a well-marked clinical variety of calculi situated in the sacs within the urethro-vaginal septum, which communicate with the canal. 2. These are always formed directly from urinary deposits, either primarily or secondary to concretions in a urethrocele. 3. The diagnosis is easily made by direct exploration with the sound. 4. The surgical treatment consists in incision through the urethro-vaginal septum, removal of the stone, excision of the sac, and immediate suture.

PÆDIATRICS.

UNDER THE CHARGE OF
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ASSISTED BY
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The Spleen in Tuberculosis of Childhood.

Manicatide (*Revue Mensuelle des Maladies de l'Enfance*, February, 1896, p. 88) has examined the spleen in twelve cases of tuberculosis occurring in children. In ten cases tuberculous disease of the spleen was found, eight showing distinct macroscopic evidence of the disease, and the remaining two requiring microscopic examination to demonstrate its presence. Some of the cases examined presented a more or less generalized tuberculosis, but in several, in which the affection was of limited extent, the spleen was involved. Tuberculosis of the spleen is, therefore, much more frequent than is commonly believed.

In all the cases examined the spleen was increased in size, even when the evolution of the disease had been slow. This observation confirms the views of Landouzy and Henoch, who have always insisted upon the hypertrophy of the spleen in tuberculous children.

Histologically, if the evolution of the disease has been rapid, gray granulations predominate, with congestion of the organ; while if the evolution has been more slow and the child is of more advanced age, the tubercles are caseous, and the spleen sclerotic. In only one case was amyloid degenera-

tion of the small vessels found. Giant cells are numerous, but the bacilli are not observed in any great number.

Contrary to the general conclusion of Bezançon (*Thèse de Paris*, 1895), tubercles do not always develop in the interior of the Malpighian corpuscles, but may be found quite often in the pulp, in the interstitial tissue, about the veins, and even in the capsule of the organ.

Facial Herpes Secondary to Toothache.

George Carpenter, of London (*Pediatrics*, May 1, 1896) calls attention to a fact frequently observed by him, that herpes facialis may be due to irritation of the trifacial nerve reflexed from some dental affection. He suggests that facial herpes in the young should not be disposed of in an offhand way as only a "cold," for children suffering from toothache do not always complain of the teeth. Facial herpes, therefore, should be looked upon as possibly due to dental worry, and its cause at least be sought within the mouth.

Leucocytosis in Diphtheria.

Schlesinger (*Archiv f. Kinderheilkunde*, 1896, Bd. xix. S. 378) has examined the blood in twenty-four children suffering from diphtheria, with a view to determining the effects of antitoxic serum. In twenty-one of these cases, when examined before the injections, he found a manifest hyperleucocytosis, the degree of which varied between 1 to 71 and 1 to 275. This leucocytosis was not in relation with either the age of the child or the elevation of temperature presented at the moment of the examination; the influence of the gravity of the affection upon the leucocytosis was not constant, but in general the degree of hyperleucocytosis was more marked the graver the case. It was also observed that hyperleucocytosis diminished as the case proceeded to recovery, but persisted in the cases terminating in death.

The influence of an injection of serum was manifested at first by a diminution of hyperleucocytosis, followed at the end of some time by an increase in the number of leucocytes, which did not always attain the degree observed before the injection.

The Scorbutic Nature of Barlow's Disease.

An interesting contribution to the discussion whether Barlow's disease should be considered as allied to rachitis or scurvy—a question which the Germans seem not yet to have settled to their satisfaction—is furnished by a case reported by Freudenberg (*Archiv f. Kinderheilkunde*, Bd. xix. S. 217). An infant of nine months, nourished for the first three months upon the breast, and thereafter on sterilized milk, contracted pertussis from his brother, in the course of which ulceration of the gums, pseudo-paralysis of the limbs, and other evidences of Barlow's disease developed. Baginsky, who saw the child at this time, made the diagnosis of Barlow's disease, and ordered phosphorated cod-liver oil. This treatment having been continued without the slighest success for fifteen days, an antiscorbutic treatment was begun, with complete cure in fifteen days. This result of antiscorbutic treat-

ment induces the author to decide that Barlow's disease is a manifestation of scurvy in the infant.

[This case adds another to the rapidly increasing number recently reported, which go to prove the influence of sterilization in the etiology of many cases of infantile scurvy.]

Diagnosis of Pulmonary Tuberculosis in Children by Tuberculin.

Gaffié (*Thèse de Paris*, 1895) refers to the difficulties in an early diagnosis of pulmonary tuberculosis in the young, and after reviewing the various signs shows that none of them can be considered pathognomonic. Tuberculin alone, injected into the cellular tissue in dose of one-twentieth of a milligramme, gives a distinctive reaction in presence of tuberculous disease. In the twenty cases in which this injection had been made the reaction was mild and ephemeral, giving rise to no complication and occasioning only slight inconvenience, such as dryness of the mouth, headache, constriction of the chest, and redness of the face.

Etiology of Pemphigus of the Newborn.

Peter (*Berliner klinische Wochenschrift*, 1896, No. 6) records a case of pemphigus in a newborn child whose mother was suffering from puerperal fever. A bacteriological examination of the contents of the blebs showed the presence of a diplococcus analogous to that described by Demme, and the staphylococcus aureus and albus. The same organisms were found in the milk of the mother and in the blood of the infant. The author, therefore, considers the pemphigus a result of infection through the milk.

Post-mortem Intussusception.

Dr. John Ruhrah (*Archives of Pediatrics*, April, 1896) reports that while making an autopsy on the body of a year-old infant twenty hours after death from endocarditis he observed numerous intussusceptions of the small intestine occur. On opening the belly the intestines had appeared normal, but five minutes later, while the thorax was being dissected, there occurred an intussusception of the ileum, the upper portion of the gut, about 6 cm. in length, being invaginated into the lower. On handling the intestines other portions of the ileum and jejunum started to invaginate themselves by what was apparently a reverse peristalsis. In a few minutes the entire small gut had become a mass of intussusceptions, varying in length from 5 to 10 centimetres. The number of separate invaginations was between twenty and thirty. It is stated that no solutions were used in or about the abdomen. [It would be of interest to know what medication had been given during the last days of life.]

A Study of Typhoid Fever in Childhood.

John Lovett Morse (*Boston Medical and Surgical Journal*, February 27, 1896, p. 205) has made a study of 284 cases of typhoid fever in children, based upon the records of cases admitted to the Boston City Hospital, from January 1, 1882, to January 1, 1895. A *résumé* of conclusions shows that the disease

is rare under two years of age, but occurs about as frequently in children between five and ten as in those between ten and fifteen. The mortality in cases under fifteen is about 6 per cent., or half that in adults. The course is shorter and less severe than in adults; this, as well as the low mortality, being due to the slight intensity of the intestinal lesions. The onset is acute in about one-third of the cases in the second five years, and in about one-fifth of those in the third five years. Nose-bleed occurs in about 50 per cent. of all cases, and is often severe. The average duration of the fever is a little less than three weeks, being somewhat shorter in younger than in older children. The proportion of cases in which the duration is not more than ten days is twice as great in children under ten as in those over ten. The temperature-curve is less typical than in adults; the remittent second stage is absent in more than 50 per cent. of the cases under ten, and in 40 per cent. of those between ten and fifteen. Relapses are nearly as frequent in children as in adults and follow the same course. The tongue is rarely as dry as in adults. Vomiting is a common initial symptom; is not very infrequent, nor is it an unfavorable symptom, during the course. Constipation is more common than diarrhœa, especially in younger children. Distention is present in from 50 to 70 per cent. of all cases; and tenderness, rarely very marked, in about one-half. Hemorrhage is very rare under ten years, and much less common above that age than in adult life, being fatal in about half of the cases. Perforation is extremely uncommon. Rose-spots are present in from 60 to 70 per cent. of all cases. The spleen can be demonstrated clinically to be enlarged in from 80 to 90 per cent. Albuminuria is common, and occurs with equal frequency at all ages, but serious renal complications are rare, especially in young children. The pulse-rate, as usual in adults, is low in comparison with the temperature, 72 cases between five and ten showing an average range of from 93 to 124, and 185 cases from ten to fifteen giving 87 to 118.

The Cardiac Hypertrophy of Growth.

Romme (*Revue Mensuelle des Maladies de l'Enfance*, April, 1896, p. 202) reviews the arguments for and against the existence of a cardiac hypertrophy due entirely to developmental changes associated with adolescence, as advanced in 1869 by Blache, and advocated more recently by Germain Sée. Romme confirms the conclusions of Potain and Vaquez, that when, during the period of growth, hypertrophy of the heart is encountered, the condition is due to some other cause than the mere growth of the body.

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